

3.7 Biological Resources and Wetlands

3.7.1 Introduction

This section describes the regulatory setting and the affected environment for biological resources, the potential impacts on these resources that would result from implementing the project, and the measures that would reduce such impacts. The term “biological resources” includes special-status plant and wildlife species, habitats of concern (including special-status plant communities, jurisdictional waters, critical habitat, conservation areas [i.e., Recovery Plan areas for federally listed species, conservation easements, public lands, conservation banks, and Habitat Conservation Plans], and protected trees), and wildlife movement corridors. This section summarizes detailed information contained in the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c). Additional information regarding biological resources is included in the following sections:

- Section 3.4, Noise and Vibration, discusses noise and vibration that would occur in the project vicinity from the operation of the project. Potential impacts on wildlife due to project-related noise and vibration are based on information provided in the *High-Speed Ground Transportation Noise and Vibration Impact Assessment Manual* (FRA 2005).
- Section 3.8, Hydrology and Water Resources, discusses existing surface water hydrology, water quality, groundwater, and floodplains, and identifies potential impacts on these resources for each alternative.
- Section 3.14, Agricultural Lands, discusses the range of impacts on agricultural lands that may overlap with the biological conditions discussed and evaluated in this section.
- The 2005 *Final Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System* (Statewide Program EIR/EIS) (Authority and FRA 2005) concluded that the project would have a significant impact on biological resources and committed to mitigation strategies and design practices to reduce effects.

Cumulative impacts are discussed in Section 3.19, and growth-inducing impacts are discussed in Section 3.18.

A. KEY DEFINITIONS

Key definitions of special-status species, special-status plant communities, and jurisdictional waters are provided below. Each of these resources is further defined in the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

- **Special-Status Species:** Special-status species are plants and animals that are legally protected under the federal Endangered Species Act of 1973 (federal ESA), the California Endangered Species Act (CESA), and/or other regulations, such as those species that meet the definitions of rare or endangered under CEQA Guidelines Sections 15380 and 15125.
- **Special-Status Plant Communities:** Special-status plant communities are determined to be significant and/or to represent rare vegetation types (California Natural Diversity Database [CNDDDB] [CDFG 2011]) or to have limited distribution statewide or within a county or region. These communities are often vulnerable to the environmental effects of projects (CDFG 2000). The CNDDDB contains plant communities and species (both plant and animal) classified as special-status under the federal ESA and CESA. A list of special-status plant communities

in California is maintained by CDFG in the *Vegetation Classification and Mapping Program List of California Vegetation Alliances* (CDFG 2009b).

- Jurisdictional Waters:** Wetlands and other waters in the project vicinity, including waters of the United States, waters of the state, and state streambeds and lakes, are regulated by the federal government (U.S. Army Corps of Engineers [USACE]) and the State of California (Regional Water Quality Control Board [RWQCB] and CDFG). When considering wetlands and other waters, these features are collectively termed jurisdictional waters. Wetlands and other waters as delineated during the jurisdictional delineation (see the *Fresno to Bakersfield Preliminary Jurisdictional Waters and Wetlands Delineation Report* [Authority and FRA 2011b]), are assumed to fall under the jurisdiction of the USACE, RWQCB, and CDFG for purposes of this discussion. Confirmation of these waters as jurisdictional by the USACE, RWQCB, and CDFG will be conducted when the regulatory permitting process is conducted. Definitions of the categories that are included in the jurisdictional waters are presented below.
- Wetlands:** According to the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the recently published *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008a), three criteria must be satisfied to classify an area as a jurisdictional wetland: (1) a predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation), (2) soils that saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part (hydric soils), and (3) permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology).
- Waters of the United States:** The federal Clean Water Act (CWA) defines waters of the United States as follows: (1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (2) All interstate waters including interstate wetlands; and (3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce (33 CFR 328.3[a]).
- Waters of the State:** Waters of the state are broadly defined by the Porter-Cologne Water Quality Control Act (Section 1305[e]). Under this definition, isolated wetlands that may not be subject to regulations under federal law are considered waters of the state. However, the State Water Resources Control Board (SWRCB) has not yet adopted a wetland definition. On October 6, 2009, the Technical Advisory Team for the Wetland and Riparian Area Protection Policy (WRAPP) presented a definition to the SWRCB as follows: An area is a wetland if, under normal circumstances, it (1) is saturated by ground water or inundated by shallow surface water for a duration sufficient to cause anaerobic conditions within the upper substrate; (2) exhibits hydric substrate conditions indicative of such hydrology; and (3) either lacks vegetation or the vegetation is dominated by hydrophytes (San Francisco Estuary Institute 2009).
- Lakes and Streambeds:** CDFG has not released an official definition of lake or streambed jurisdiction and therefore the extent of areas regulated under Section 1602 remains undefined. However, CDFG jurisdiction generally includes the streambed and bank, together with the adjacent floodplain and riparian vegetation.

3.7.2 Laws, Regulations, and Orders

The following lists a summary of federal, state, and local laws, regulations, and agency jurisdiction and management guidance that apply to biological resources. Table 3.7-1 lists federal laws and regulations and Table 3.7-2 lists state laws and regulations. For full definitions, refer to the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

A. FEDERAL

Table 3.7-1
Federal Laws and Regulations

Policy Title	Summary
Federal	
Endangered Species Act of 1973 (ESA) (42 U.S.C. 4321 et seq.)	<p>The federal ESA and subsequent amendments provide guidance for conserving federally listed species and the ecosystems upon which they depend.</p> <p><u>Section 9 (Prohibited Acts)</u>: Section 9 of the federal ESA prohibits the “take” of any plant, fish or wildlife species listed under the federal ESA as endangered, unless otherwise authorized by federal regulations.</p> <p><u>Section 7 (Interagency Consultation and Biological Assessments)</u>: Section 7 of the federal ESA requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) or the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS), as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat.</p> <p><u>Section 10 (Habitat Conservation Plans)</u>: Section 10 of the federal ESA provides a process by which nonfederal entities may obtain an Incidental Take Permit from the USFWS or NMFS for activities that might legally but incidentally result in “take” of endangered or threatened species.</p>
Magnuson-Stevens Fishery Conservation and Management Act (U.S.C. Section 1801 et seq.)	The Magnuson-Stevens Fishery Conservation and Management Act requires all federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect fish habitats.
Clean Water Act (CWA)	<p>The federal CWA serves as the primary federal law protecting the quality of the nation’s surface waters, including wetlands.</p> <p><u>Section 401</u>: Under the CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the U.S. must obtain certification from the state in which the discharge would originate or from the interstate water pollution control agency with jurisdiction over affected waters.</p> <p><u>Section 402</u>: Under the CWA Section 402, construction-related stormwater discharges to surface waters are regulated through the National Pollutant Discharge Elimination System (NPDES) program. Project sponsors must obtain an NPDES permit from the RWQCB.</p> <p><u>Section 404</u>: Under the CWA Section 404, the USACE and the U.S. Environmental Protection Agency (EPA) regulate the discharge of dredged and fill materials into the waters of the U.S. Project sponsors must obtain a permit from USACE for discharges of dredged or fill materials into jurisdictional waters over which the USACE determines that it will exert jurisdiction.</p>

Table 3.7-1
Federal Laws and Regulations

Policy Title	Summary
Rivers and Harbors Act of 1899	Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the USACE for the construction of any structure in or over any navigable waters of the U.S.
U.S. Fish and Wildlife Coordination Act (16 U.S.C. Sections 661 to 667[e] et seq.)	The U.S. Fish and Wildlife Coordination Act applies to any federal project where any body of water is impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with USFWS and the appropriate state wildlife agency.
Migratory Bird Treaty Act (16 U.S.C. Sections 703 to 712)	The Migratory Bird Treaty Act (MBTA) protects selected species of birds that cross international boundaries (i.e., species that occur in more than one country at some point during their life cycle). The law applies to the removal of nests, eggs, and feathers.
Migratory Bird Treaty Reform Act (Division E, Title I, Section 143 of the Consolidated Appropriations Act, 2005, PL 108-447)	The Migratory Bird Treaty Reform Act amends the MBTA (16 U.S.C. Sections 703 to 712) such that non-native birds or birds that have been introduced by humans to the United States or its territories are excluded from protection under the Act. It defines a native migratory bird as a species present in the United States and its territories as a result of natural biological or ecological processes.
Bald and Golden Eagle Protection Act (16 U.S.C. Sections 668 to 668[d], 54 Statute 250)	The Bald and Golden Eagle Protection Act prohibits the destruction of bald eagles (<i>Haliaeetus leucocephalus</i>) and golden eagles (<i>Aquila chrysaetos</i>) and their occupied and unoccupied nests.
Protection of Wetlands (Executive Order 11990)	Executive Order 11990 aims to avoid direct or indirect new construction in wetlands when a practicable alternative is available. If wetland impacts cannot be avoided, all practicable measures to minimize harm must be included.
Protection of Migratory Bird Populations (Executive Order 13186)	Executive Order 13186 directs each federal agency taking actions that have or may have adverse impact on migratory bird populations to work with USFWS to develop a memorandum of understanding that will promote the conservation of migratory bird populations.
Invasive Species (Executive Order 13112)	Executive Order 13112 requires federal agencies to work cooperatively to prevent and control the introduction and spread of invasive plants and animals.
Section 4(f) of the Department of Transportation Act (49 U.S.C. Section 303)	Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 23 U.S.C 138 and 49 U.S.C. 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation land, wildlife and waterfowl refuges, and historic sites." Section 4(f) states that the Secretary of Transportation "may approve a transportation program or project...requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if: <ol style="list-style-type: none"> 1. there is no prudent and feasible avoidance alternative to the use of the land from the Section 4(f) property; and 2. the program or project includes all possible planning to minimize harm to the Section 4(f) property resulting from the use.

B. STATE

Table 3.7-2
State Laws and Regulations

Policy Title	Summary
State	
California Endangered Species Act (Sections 2050 to 2085)	CESA mandates that state agencies do not approve a project that would jeopardize the continued existence of species if reasonable and prudent alternatives are available that would avoid a jeopardy finding.
California Fish and Game Code (CFGF)	<p><u>Sections 3511, 4700, 5050, and 5515 (Fully Protected Species)</u>: The CFGF lists 37 fully protected species (CFGF Sections 3511, 4700, 5050, and 5515) and prohibits take or possession at any time of the species listed, with few exceptions.</p> <p><u>Sections 3503, 3503.5, and 3513 (Nesting Bird Protections)</u>: Section 3503 of the CFGF states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by code or any regulation made pursuant thereto. Section 3503.5 prohibits the take, possession, or needless destruction of any nests, eggs, or birds in the orders Falconiformes (New World vultures, hawks, eagles, ospreys, and falcons, among others) or Strigiformes (owls). Section 3513 prohibits the take or possession of any migratory nongame bird or part thereof, as designated in the MBTA. To avoid violation of the take provisions, it is generally required that project-related disturbance at active nesting territories be reduced or eliminated during the nesting cycle.</p> <p><u>Section 1600 et seq. (Lake and Streambed Alteration)</u>: Section 1600 et seq. of the CFGF requires notifying the CDFG prior to any project activity undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel.</p>
Natural Communities Conservation Planning Act (Sections 2800 to 2835)	This Natural Communities Conservation Planning Act was enacted to encourage broad-based planning to provide for effective protection and conservation of the state's wildlife resources while continuing to allow appropriate development and growth. Natural Community Conservation Plans (NCCPs) may be implemented, which identifies measures necessary to conserve and manage natural biological diversity within the planning area, while allowing compatible and appropriate economic development, growth, and other human uses.
California Native Plant Protection Act (Sections 1900 to 1913)	The California Native Plant Protection Act (NPPA) requires all state agencies to use their authority to carry out programs to conserve endangered and rare native plants. The NPPA gives the CFGF the power to designate native plants as "endangered" or "rare" and to protect endangered and rare plants from "take."
Porter-Cologne Water Quality Control Act	Section 13260(a) of the Porter-Cologne Water Quality Control Act (contained in the California Water Code) requires any person discharging waste or proposing to discharge waste, other than to a community sewer system, within any region that could affect the quality of the waters of the state to file a Report of Waste Discharge (ROWD).

C. REGIONAL AND LOCAL

Local and regional municipal plans pertaining to the preservation and protection of biological resources are addressed in the various general plans for Fresno, Kings, Tulare, and Kern counties, and the cities of Fresno, Corcoran, Wasco, Shafter, and Bakersfield. These plans

address such issues as habitat, protection of wildlife, oak woodland conservation, and wetlands and riparian communities. The *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c) provides more detail on the plans that were identified and considered in the preparation of this analysis. These local plans and policies were identified and considered in the preparation of this analysis.

D. HABITAT CONSERVATION PLANS IN THE PROJECT VICINITY

A Habitat Conservation Plan is a document that must accompany an incidental take permit request under Section 10 of the federal ESA. This subsection provides a summary of the applicable regional Habitat Conservation Plans that protect biological resources and/or wetlands.

Habitat Conservation Plans

Metropolitan Bakersfield Habitat Conservation Plan

The *Metropolitan Bakersfield Habitat Conservation Plan* (MBHCP) is a joint program of the City of Bakersfield and Kern County (Chapter 17.62 of the Kern County Ordinances) to assist urban development applicants in complying with federal and state endangered species regulations (City of Bakersfield and Kern County 1994). The program uses mitigation fees paid by applicants for grading or building permits to fund the purchase and maintenance of habitat land to compensate for the impact of urban development on endangered species habitat. Kern County and the City of Bakersfield have entered into a legal agreement with the CDFG and the USFWS detailing obligations under the MBHCP.

First Public Draft—Kern County Valley Floor Habitat Conservation Plan

The draft *Kern County Valley Floor Habitat Conservation Plan* (VFHCP) is a long-term program designed to conserve federally protected species, state-protected species, and/or other species of concern (Kern County Planning Department 2006). The VFHCP has not been officially adopted and is currently in draft form. In the current draft, the VFHCP establishes the conditions under which Kern County; the California Division of Oil, Gas, and Geothermal Resources; and other program beneficiaries may seek authorization to allow the taking of multiple federally and state-protected species incidental to development and other land use activities.

Once adopted, the VFHCP will be a voluntary program that provides an option for project proponents to comply with the federal ESA and CESA. Other options, such as complying with the federal ESA through Section 7 consultation or through consultation with the CDFG, are allowed.

3.7.3 Methods for Evaluating Impacts

This section describes the methods used for evaluating potential impacts on biological resources. The study areas used to identify biological resources are defined and the background review and field surveys are summarized. Both the background literature review and field surveys identified potential biological resources within the proposed project alternatives. This section also defines the types of potential impacts on the proposed project alternatives, describes the methods used to assess the various impacts, and presents the NEPA and CEQA criteria used to evaluate the significance of impacts.

A. STUDY AREAS

The Fresno to Bakersfield Section study area described in Chapter 2 encompasses the entire potential area of disturbance associated with the construction footprint, including the proposed high-speed train (HST) right-of-way and associated facilities (traction power substations, switching and paralleling stations, and areas associated with modifying or relocating roadways for

those facilities—including overcrossings and interchanges), heavy maintenance facility (HMF) sites, station alternatives, and construction areas (including laydown, storage, and similar areas [see detailed description in Chapter 2]).

The *Central Valley Biological Resources and Wetlands Survey Plan* (Authority and FRA [2009] 2011a) established these varying biological resources study areas for the following types of resources:

- **Habitat Study Area** – Construction footprint plus a 1,000-foot buffer (review of aerial photos only if between 250 feet and 1,000 feet from buffer) to evaluate direct and indirect impacts on habitats and the special-status wildlife species that use them. The Habitat Study Area was divided into two areas: a core Habitat Study Area and an auxiliary Habitat Study Area. A third, or supplemental Habitat Study Area was identified for select species that required further analysis based on agency- or protocol-recommended species-specific buffers:
 - The core Habitat Study Area includes the proposed construction footprint and a 250-foot buffer. This was the area that was physically surveyed.
 - The auxiliary Habitat Study Area, from the edge of the core area laterally 750 feet, was surveyed through extrapolation of observations made in the core Habitat Study Area, from aerial photograph interpretation, and in windshield surveys.
 - The supplemental Habitat Study Area extends laterally from the construction footprint up to 1.24 miles, depending on the target species, and identifies species-specific habitats based on aerial photograph interpretation and documented occurrences of the species, and on observations of special-status species and their habitats made in the field.
- **Wetland Study Area** – Construction footprint plus a 250-foot buffer to evaluate direct and indirect impacts on wetlands and special-status wildlife using vernal pools. Direct impacts on wetlands are within the 100-foot construction footprint and indirect impacts are within the 250-foot buffer.
- **Special-Status Plant Study Area** – Construction footprint to evaluate direct and indirect impacts plus a 100-foot buffer to evaluate indirect impacts on sensitive plant resources (including special-status plants, special-status plant communities, protected trees, and elderberry shrubs).

B. BACKGROUND REVIEW

Biological resources potentially occurring in the study areas were identified through queries of existing databases and agency information. The sources used are described in detail in the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

C. FIELD SURVEYS

The potential for project impacts on biological resources depends largely on the presence of suitable habitat in and adjacent to areas that would be affected by the project. Project biologists conducted field surveys to determine the presence or absence of biological resources and to document the location of any biological resources through habitat characterization and mapping. Habitat characterization and mapping were conducted throughout the study area where access was granted and where properties were inaccessible. Where permission to enter was not granted, field crews used public roads, and adjacent parcels to characterize and map biological resources. Access was granted to approximately 40% of the study area. Visual surveys were conducted to compare background information with existing data and aerial signatures identified

in high-resolution aerial imagery. The primary field surveys discussed in this section were conducted in spring and summer 2010. Supplemental surveys were conducted in 2011 in response to engineering design changes.

The *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c) provides detailed descriptions of the various methods employed during the field surveys for biological resources. The various field surveys were conducted according to the methodologies described in the California High-Speed Train *Central Valley Biological Resources and Wetlands Survey Plan*, which was prepared, in part, for the Fresno to Bakersfield Section of the HST (Authority and FRA [2009] 2011a).

Botanical Surveys

Field surveys for special-status plants were conducted during the growing season (March, April, May, and in select areas in June) in accordance with the *CNPS Botanical Survey Guidelines* (CNPS 2001), the *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 1996), and the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009a). In addition, where applicable, surveys for the five federally listed species, Bakersfield cactus (*Opuntia basilaris* var. *treleasei*), California jewelflower (*Caulanthus californicus*), Hoover's woolly-star (*Eriastrum hooveri*), Kern mallow (*Eremalche kernensis*), and San Joaquin woolly-threads (*Monopolies congdonii*) complied with supplemental guidance provided in *General Rare Plant Survey Guidelines* and the *Supplemental Survey Methods* (ESRP 2002).

Habitat types identified during the field surveys were compared against the known habitat requirements for each special-status plant species and for special-status plant communities with potential to occur in the regional area. The potential for a particular special-status species and special-status plant community to occur within the special-status plant species study area was then assessed and ranked as either no potential, future potential, unlikely potential, low potential, moderate potential, or high potential (Appendix 3.7-A, Attachment 1).

Fish Species

Special-status fish species (e.g., listed salmonids), other than Kern brook lamprey (*Lampetra hubbsi*), are not expected to occur in the Habitat Study Area. The Habitat Study Area is outside the historical and current known geographic range of these special-status fish species and suitable habitat is not present because of extensive water diversions and in-stream obstructions to migratory movement (see *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

Habitat assessment field surveys for the only special-status fish species with potential to occur in the Habitat Study Area, the Kern brook lamprey, were conducted in areas in the species' known geographic range following the methods described section below, Special-Status Wildlife Species. No fish sampling was conducted.

Special-Status Wildlife Species

Field surveys were conducted to map and identify the habitats (i.e., biological communities and land use cover types) in the Habitat Study Area in accordance with *A Guide to Wildlife Habitats of California* and the California Wildlife Habitat Relationship System (CDFG 1988; CDFG 2008). The California Wildlife Habitat Relationship System is a biological community-based model that associates California's wildlife species to standard habitats (e.g., biological communities that support plant and wildlife species) and rates suitability for reproduction, cover, and feeding. The field surveys were conducted to identify potentially suitable wildlife habitat for special-status wildlife species (Appendix 3.7-A, Attachment 2). Key habitat constituents mapped during field

surveys included topography and the presence or absence of vegetative cover, foraging habitat, and migration barriers (i.e., canals and roadways). Focused surveys were not conducted. Detailed information, including recommendations for focused surveys, is presented in the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

Jurisdictional Delineations

Jurisdictional delineations were conducted on accessible parcels during spring and summer 2010. The jurisdictional delineation was conducted for the purpose of obtaining a *Preliminary Jurisdictional Delineation* according to USACE Regulatory Guidance Letter 08-02 (USACE 2008b). The delineation of wetlands and other waters did not require or attempt to determine the jurisdictional status of the various features. Wetlands in the Wetland Study Area were delineated using the methods described in the *Corps of Engineers Wetlands Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Environmental Laboratory 1987; USACE 2008a). All wetlands were described using the Cowardin classification system (Cowardin et al. 1979).

Other waters of the United States in the Wetland Study Area were delineated using the methods described in *Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States* and *USACE Regulatory Guidance Letter No. 05-05*, where appropriate (Lichvar and McColley 2008; USACE 2005).

No formal guidelines exist for the identification of the extent of waters of the state (RWQCB or CDFG jurisdiction). The extent of state-regulated areas in some instances extends beyond that of waters of the United States (above the ordinary high-water mark). For example, isolated water bodies and stream channels up to the top of the stream bank or to the riparian drip line all qualify as waters of the state.

Methods associated with the wetland delineation study are discussed in detail in a separate *Fresno to Bakersfield Preliminary Jurisdictional Waters and Wetlands Delineation Report* (Authority and FRA 2011b) and also in the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

Wildlife Movement Corridors

Special-status wildlife species (specifically, mammals such as San Joaquin kit fox [*Vulpes macrotis mutica*]) have the potential to use wildlife movement corridors and habitat linkages within the Habitat Study Area. Areas identified in the literature review (Penrod, Hunter, and Merrifield 2001; Penrod et al. 2003; ESRP 2009; USFWS 1998; Spencer et al. 2010) were evaluated in the field (where access was permitted) and by aerial photography (where access was not allowed), to determine their utility as movement corridors for all wildlife, including those without special-status, on both a local and regional population level. The field surveys addressed the availability and suitability of these potential movement corridors for wildlife species and assessed corridor and habitat linkage quality at a landscape level. This evaluation was augmented, as feasible, by identifying additional areas, such as creeks and other drainages in the Habitat Study Area, which may be used by wildlife as movement corridors.

D. METHODS FOR EVALUATING IMPACTS

The fundamental method for evaluating impacts included a process for qualifying or quantifying the direct and indirect impacts and comparing those findings against the severity of the impact and/or a specific threshold. For example, during the habitat assessment process, terrestrial and aquatic wildlife habitats were mapped within the Habitat Study Area (refer to Section 3.7.3[A], Study Areas). The plant community and cover-type mapping units were then overlaid on

construction footprint maps using geographic information system (GIS) applications. Acreages were then calculated and presented in tabular form for evaluation purposes in Section 3.7.5, Environmental Consequences.

A similar GIS-related process was used for evaluating impacts on special-status species, although these impacts were based on the potential for occurrence in suitable habitat. For wildlife movement, existing and accessible drainage corridor crossings (i.e., bridges and culverts) were assessed with respect to their relative function to facilitate wildlife movement through the landscape. In this manner, the information presented can be quantified as appropriate and a comparative evaluation can be made. Qualitative discussions are provided for indirect impacts, such as noise, motion, and startle, and any potential hydrologic issues, such as erosion and sedimentation. For these indirect impacts, the severity is evaluated without having specific numeric or quantitative data.

Impacts are presented in Section 3.7.5, in a manner that allows for a comparison of the HST alternative alignment. This comparison uses deltas " Δ " that represent the difference in impact acreages between an alternative alignment and its corresponding segment in the BNSF Alternative: positive (+) deltas indicate that the alternative alignment results in greater impact acres than its corresponding segment in the BNSF Alternative; negative (-) deltas indicate that the alternative alignment results in fewer impact acres than its corresponding segment in the BNSF Alternative.

The affected environment established for biological resources was based on a combination of methods including field investigations and aerial photo mapping/interpretation. Field investigations conducted throughout the study area included a combination of visual assessments from public right-of-way and field surveys. Field surveys were conducted in all areas where access was granted, approximately 40% of the project footprint. The significance of the impact and the mitigation proposed are based on the standards of significance outlined in the next two subsections (see Sections 3.7.3[E] and 3.7.3[F]).

Additional information regarding the methods used for evaluating impacts, including a detailed description of the qualitative and quantitative methods and the assumptions and limitations in determining the potential construction and operation impacts is provided in the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

E. METHODS FOR EVALUATING EFFECTS UNDER NEPA

Pursuant to NEPA regulations (40 CFR 1500-1508), project effects are evaluated based on the criteria of context and intensity. Context means the affected environment in which a proposed project occurs. Intensity refers to the severity of the effect, which is examined in terms of the type, quality, and sensitivity of the resource involved, location and extent of the effect, duration of the effect (short- or long-term), and other consideration of context. Beneficial effects are identified and described. When there is no measurable effect, impact is found not to occur. Intensity of adverse effects are summarized as the degree or magnitude of a potential adverse effect where the adverse effect is thus determined to be negligible, moderate, or substantial. It is possible that a significant adverse effect may still exist when on balance the impact is negligible or even beneficial.

Negligible impacts related to biological resources are defined as a slight change from existing biological conditions resulting in little or no regional effects and minor effects within seasonal shifts in populations, biotic communities, and wildlife movement patterns. Moderate impacts are defined as incremental regional effects and measurable adverse loss to terrestrial/aquatic plant communities, jurisdictional waters/wetlands, special-status species, or wildlife movement.

Substantial impacts are influential regional effects and relatively high intensity loss to terrestrial/aquatic plant communities, jurisdictional waters/wetlands, special-status species or wildlife movement.

F. CEQA SIGNIFICANCE CRITERIA

According to CEQA Guidelines, Appendix G, the project would result in a significant impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG or USFWS.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFG or USFWS.
- Have a substantial adverse effect on federally protected wetlands, as defined by CWA Section 404 (including, but not limited to, seasonal wetlands, canals, ditches, reservoirs, retention and detention basins, and seasonal riverine, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted HCP, Natural Communities Conservation Plan (NCCP), or other approved local, regional, or state HCPs.

General indicators of significance, based on guidelines or criteria in NEPA, CEQA, CWA, CESA, federal ESA, and regulatory guidance from FRA include:

- Potential modification or destruction of habitat, movement corridors, or breeding areas for endangered, threatened, rare, or other special-status species.
- Potential measurable degradation of protected habitats, sensitive vegetation communities, wetlands, or other habitat areas identified in plans, policies, or regulations.
- Potential loss of a substantial number of any species that could affect the abundance or diversity of that species beyond the level of normal variability.
- Potential indirect impacts from excessive noise eliciting a negative response and avoidance behavior.

3.7.4 Affected Environment

This section summarizes the existing biological resources within the study areas, which include regional setting, special-status species, habitats of concern (special-status plant communities, jurisdictional waters, critical habitat, essential fish habitat, conservation areas [i.e., recovery plans for federally listed species, conservation easements, public lands, conservation banks, HCP areas, and protected trees]), and wildlife movement corridors. There are no applicable regional plans or policies pertaining to biological resources within the Fresno to Bakersfield Section study area. More details are provided in the *Fresno to Bakersfield Section: Biological Resources and*

Wetlands Technical Report (Authority and FRA 2011c). The information is presented in the following subsections:

1. Regional Setting
2. Plant Communities and Land Cover Types
3. Special-Status Species
4. Habitats of Concern
5. Wildlife Movement Corridors

The two regional habitat conservation plans within the study area are the *Metropolitan Bakersfield Habitat Conservation Plan* (MBHCP) and the draft *Kern County Valley Floor Habitat Conservation Plan* (VFHCP) and are discussed below in Section 3.7.5.

A. REGIONAL SETTING

Historically, the Central Valley was characterized by California prairie, marshlands, valley oak savanna, and extensive riparian woodlands (Hickman 1993). Today, more than 80% of the Central Valley is covered by farms and ranches (NRCS 2006). Overall, the study areas are highly disturbed and fragmented because of urban, agricultural, railroad, highway, and local road land cover types. In a few areas, native vegetation remains relatively undisturbed, although invasive and non-native plant species may occur in these areas. If they have not been recently plowed or disked, or if they show no sign of having been disturbed in recent decades, these areas are referred to as “natural areas” in this document.

Major land uses between Fresno and Bakersfield include urban (industrial, commercial, and residential), rural residential, and agricultural. Some undeveloped natural areas occur in the vicinity of Corcoran and Allensworth. Several public lands, including Pixley National Wildlife Refuge (NWR), Allensworth State Historic Park, and Allensworth Ecological Reserve (Allensworth ER), are located in or immediately adjacent to the study areas. These public lands are managed for a variety of reasons: historical preservation, jurisdictional waters, and special-status species.

The study areas are broadly located in the Tulare Basin of the South San Joaquin Valley between SR 99 and Interstate 5. The Tulare Lake Basin has a drainage area of approximately 17,400 square miles. All of the streams and rivers located in the study areas have been dredged, culverted, diverted, dewatered, or channelized, or have had their active floodplains severely reduced. Most of the water is diverted into an extensive network of irrigation canals, ditches, and retention and detention basins.

B. PLANT COMMUNITIES AND LAND COVER TYPES

General Habitat Conditions – Terrestrial

The categories of terrestrial plant communities and land cover types that occur in the Habitat Study Area are summarized below, and are depicted on Figures A3-1a through A3-1o in Appendix 3.7-A, Attachment 3. The plant communities and land cover types identified in the Habitat Study Area include agricultural lands, developed areas, and natural and seminatural areas. Habitat conditions in the Habitat Study Area are discussed in detail in *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

The following descriptions of plant communities and land cover types are based on *A Guide to Wildlife Habitats of California* and the California Wildlife Habitat Relationship System (Mayer and Laudenslayer 1988; CDFG 2008).

Agricultural Lands

Eight types of agricultural land are found in the Habitat Study Area: cropland, dryland grain crops, irrigated grain crops, irrigated hayfield, irrigated row and field crops, deciduous orchard, evergreen orchard, and vineyard (depicted in Figures A3-1a through A3-1o, Appendix 3.7-A, Attachment 3). These land uses, along with urban land uses, characterize the overwhelming majority of land in the Habitat Study Area. Agricultural lands may provide marginal habitat for seasonal forage and refugia for a limited number of common species and special-status species. Ruderal plant species, which are defined as species that grow where the natural vegetation has been removed or significantly degraded by past or current human activity, are found within these agricultural land types, especially where these types were bordered by roads, canals, ditches, or other highly disturbed features. Vegetation in these areas is highly variable but often includes a mix of nonnative annual grasses such as ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), and red brome (*Bromus madritensis* ssp. *rubens*) wild oats (*Avena* spp.), Italian ryegrass (*Lolium multiflorum*), smooth barley (*Hordeum murinum*), and weedy forbs such as bur clover (*Medicago polymorpha*), redstem filaree (*Erodium cicutarium*), yellow star thistle (*Centaurea solstitialis*), Russian thistle (*Salsola tragus*), tumbleweed, (*Amaranthus albus*), Johnson grass (*Sorghum jalapense*), and silver-leaf horsenettle (*Solanum eleagnifolium*).

Some agricultural species have become naturalized outside the areas where they are planted. These include black mustard (*Brassica nigra*), rape mustard (*Brassica rapa*), Johnson grass (*Sorghum jalapense*), cultivated timothy (*Phleum pretense*), common barley (*Hordeum vulgare*), common wheat (*Triticum aestivum*), and peach (*Prunus persica*). Native species also occurring in ruderal areas within agricultural lands often consist of (*Distichlos spicata*), fiddleneck (*Amsinckia menziesii* var. *intermedia*), Canada horseweed (*Conyza canadensis*), annual sunflower (*Helianthus annuus*), alkali mallow (*Malva leprosa*), and tarplants (*Hemizonia* spp.). Specifically, field and row crops such as alfalfa provide foraging habitat for raptors, particularly Swanson's hawks (*Buteo swainsonii*). Fallow fields and inactive farmland may provide nesting habitat for several wildlife species including northern harrier (*Circus cyaneus*) and western burrowing owl (*Athene cunicularia*). These and other agricultural lands may provide foraging or dispersal habitat for loggerhead shrike (*Lanius ludovicianus*), white-tailed kite (*Elanus leucurus*), and American badger (*Taxidea taxus*).

Developed Areas

Developed areas are characterized by various types of cover, including barren and urban (e.g., commercial/industrial, transportation corridors [depicted in Figures A3-1a through A3-1o, Appendix 3.7-A, Attachment 3]). These areas generally include landscaped areas, yards, and various outbuildings and provide low-quality resources for wildlife. However, certain species, such as the American peregrine falcon (*Falco peregrinus anatum*) and western mastiff bat (*Eumops perotis californicus*) have adapted to developed areas and may use these areas for nesting or roosting habitat.

Ruderal and ornamental plant species, generally composed of non-native species, are dominant within all these developed areas, particularly where land use was in transition and bare ground had recently been revealed, such as by roadsides, in median strips, and within vacant lots. Vegetation in these areas is highly variable, but generally includes non-native grass species, including ripgut bromes (*Bromus* spp.), wild oats, Italian ryegrass, smooth barley, and weedy forbs, such as bur clover, redstem filaree, yellow star thistle, Italian thistle (*Carduus pycnocephalus*), black mustard, rape mustard, white goosefoot (*Chenopodium album*), stinking goosefoot (*Chenopodium vulvaria*), and silver-leaf horsenettle. Escaped ornamentals within these areas often include oleander (*Nerium oleander*), elms (*Ulmus* spp.), bachelor's buttons (*Centaurea cyanea*), spotted knapweed (*Centaurea maculosa*), butterfly bush (*Buddleja davidii*),

Athel tree (*Tamarix aphylla*), tree tobacco (*Nicotinaina glauca*), and Himalayan blackberry (*Rubus armeniacus*).

Barren

Barren areas are defined by the permanent absence of vegetation. Areas mapped as barren during the field survey include areas of bare earth resulting from industrial activities such as gravel extraction. Barren habitats support few native wildlife or plant species, although rock dove, Brewer's blackbird (*Euphagus cyanocephalus*), killdeer (*Charadrius vociferus*), and western fence lizard (*Sceloporus occidentalis*) were observed in barren areas during the field survey effort.

Urban

Urban areas include municipalities; industrial, residential, and agricultural structures (e.g., feedlots and poultry farms); and adjacent dedicated areas, such as yards, roads and road shoulders, highways, parking lots, and stockpiles. Both adaptive native species and non-native wildlife species occur in urban centers of the Habitat Study Area. Within urban areas, mapped wetland features such as ditches and seasonal wetlands are present. In Bakersfield, special-status species like the San Joaquin kit fox have also become acclimated to developed urban areas (CDFG 2011).

BNSF Urban

The BNSF Railway right-of-way travels along the length of the Central Valley in a north-south direction, extends south from Fresno through Hanford, and parallels SR 43 from north of Corcoran to the town of Greenacres just west of Bakersfield. In general, the BNSF Railway right-of-way is 50 feet wide, and the rail tracks are set on an embankment that is a minimum of 5 feet above the surrounding grade. The embankment is constructed of compacted soil and imported gravel fills. Numerous culverts bisect the base of the berms for drainage purposes. Crossings of larger drainages exist as freestanding bridges. Most road crossings of the BNSF Railway right-of-way consist of at-grade crossings that allow vehicles to drive over the berms and tracks.

For the purposes of this analysis, all developed lands (e.g., crop, urban) in the BNSF Railway right-of-way were mapped under the BNSF Railway classification. All areas of developed habitats (e.g., crop, urban) in the right-of-way are controlled by BNSF Railway, which retains the right to modify land use (e.g., remove orchard trees or structures). All riverine, canal, and natural upland habitats (i.e., annual grassland, alkali desert scrub, and valley foothill riparian) in the BNSF Railway right-of-way were mapped as such and not as BNSF Railway right-of-way.

At any given point along the BNSF Railway right-of-way, wildlife use is largely determined by adjacent habitats. However, in areas dominated by frequent soil disturbance, especially cropland habitats, the railroad berms may provide habitat for fossorial animals. The BNSF Railway right-of-way contains mapped wetland features such as seasonal wetlands and vernal pools.

Natural and Seminatural Areas

The terms natural and seminatural areas are used within this section to distinguish the land uses and plant communities described in the subsequent sections where current human influences substantially influence the plant composition and structure. While the natural and seminatural plant communities have been altered to some extent by past and present human activities, the composition and structure of these communities are generally not actively managed or controlled. A distinction is also made between those habitats that are largely characterized by native plants and those in which the dominant plants are composed of introduced species.

Natural and seminatural areas are characterized by various types of cover, including alkali desert scrub, annual grassland, valley foothill riparian, and pasture (depicted on Figures A3-1a to A3-1o, located in Appendix 3.7-A, Attachment 3). Ruderal plant species are found along the margins and sometimes within natural and seminatural habitat types.

Alkali Desert Scrub

Alkali desert scrub vegetation in the Habitat Study Area is dominated by shrublands with understory cover of herbs and forbs, and by vernal inundated or saturated areas lacking a shrub layer (vernal pools). These latter areas are characterized by herbs and forbs interspersed with barren, vernal inundated, or saturated alkali patches. Primary plant species observed during the various surveys included spinescale saltbush (*Atriplex spinifera*), cattle saltbush (*Atriplex polycarpa*), iodine bush (*Allenrolfea occidentalis*), goldenbush (*Isocoma acradenia*), and bush seepweed (*Suaeda moquinii*).

Alkali desert scrub supports a wide variety of wildlife species including special-status species such as the blunt-nosed leopard lizard (*Gambelia sila*), the San Joaquin kit fox, the Tipton kangaroo rat (*Dipodomys nitratoideus nitratoideus*), and coast horned lizards (*Phrynosoma coronatum blainvillii*). Many wildlife species found in this habitat type are burrowers or burrow-dependent species, such as western burrowing owl, western spadefoot (*Spea hammondi*), American badger, foxes (*Vulpes* sp.), coyote (*Canis latrans*), California ground squirrel (*Spermophilus beecheyi*), and a variety of kangaroo rats (*Dipodomys* spp.) species.

In the Habitat Study Area this habitat was concentrated in the vicinity of Allensworth and in relatively undisturbed areas.

Annual Grassland

In the Habitat Study Area annual grasslands are typically characterized by non-native annual grass species. Dominant non-native grass species include several species of brome (*Bromus* spp.), fescue (*Festuca* spp. and *Vulpia* spp.), oats (*Avena* spp.), and barley (*Hordeum* spp.). Native species, including goldfields and owl's clover (*Castilleja* spp.), may be present in annual grasslands but typically in lower densities. Annual grasslands in the Habitat Study Area have typically experienced some level of past disturbance associated with various agriculture practices, row cropping, or grazing. Although these areas typically have a history of disturbance, they continue to provide suitable habitat for a number of special-status plant and wildlife species. Similar to alkali desert scrub habitats, annual grasslands that have experienced lower levels of disturbance often exhibit vernal inundated or saturated areas (vernal pools).

Valley Foothill Riparian

Valley foothill riparian biological communities in the study areas are located along the riparian corridors and associated floodplains or terraces of the Kings River, Cross Creek, Tule River, Poso Creek, and Kern River, and along their associated sloughs and side channels. These areas are characterized by tall trees, including Fremont cottonwood (*Populus fremontii*), western sycamore (*Platanus racemosa*), and valley oak (*Quercus lobata*). Subcanopy trees include white alder (*Alnus rhombifolia*) and ash (*Fraxinus* sp.). Understory shrubs and herbaceous species typically include California blackberry (*Rubus ursinus*), elderberry (*Sambucus* sp.), poison oak (*Toxicodendron diversilobum*), buttonbush (*Cephalanthus occidentalis*), willows (*Salix* spp.), rushes (*Juncus* spp.), mugwort (*Artemisia douglasiana*), poison hemlock (*Conium maculatum*), and stinging nettle (*Urtica dioica* ssp. *holosericea*). In the study areas, an abrupt transition from valley foothill riparian vegetation to cropland or orchard results in narrow bands of riparian vegetation.

Valley foothill riparian habitat provides food, water, migration and dispersal corridors, and escape, nesting, and thermal cover for an abundance of wildlife. Protected insects like the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) are native to these habitats (CDFG 1988). Several sensitive natural communities overlap with this habitat type, including valley oak woodland, Fremont cottonwood forest, Goodding's willow thickets, and red willow thickets.

Pasture

Pastures are actively grazed fields associated with private property. Generally, these areas contain a mix of annual grasses, such as bromes, barley, oats, and annual fescues, with other herbaceous species. Typically, these areas are actively grazed by cattle or horses but not irrigated. These areas provide some potential to support special-status wildlife species and limited potential to support special-status plant species because of the high level of disturbance.

General Habitat Conditions – Aquatic

This section describes the aquatic plant communities and cover types mapped in the Habitat Study Area. Aquatic plant communities and cover types, except "seasonal wetlands" and "vernal pools", are based on the *Guide to Wildlife Habitats of California* and California Wildlife Habitat Relationship System (CDFG 1988, CDFG 2008). The aquatic plant communities and cover types identified in the Habitat Study Area include seasonal wetlands, including vernal pools, fresh emergent wetland, lacustrine, and palustrine. Habitat conditions in the Habitat Study Area are discussed in detail in the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

Seasonal Wetlands

Seasonal wetlands are found in annual grasslands, fresh emergent wetlands, pastures, and fallow agricultural areas. Seasonal wetlands often occur in fallow or abandoned fields where the soils have sufficient clay content or sufficient compaction to allow water to pond. Typical vegetation includes broadleaf cattail (*Typha latifolia*), field horsetail (*Equisetum arvense*), barley, saltgrass (*Distichlis spicata*), meadow barley (*Hordeum brachyantherum*), and common tarweed (*Hemizonia pungens*). Seasonal wetlands are south of Cross Creek.

Vernal Pools

Vernal pools occur in alkali desert scrub and annual grassland (discussed above in General Habitat Conditions – Terrestrial subsection) within the Habitat Study Area. Vernal pools are a type of seasonal wetland characterized by a low, amphibious, herbaceous community dominated by annual herbs and grasses. Vernal pools are isolated, unstable ecosystems that respond markedly to winter precipitation and the drying up of water in spring and summer. Vernal pools within the Habitat Study Area typically occur as a result of saline-sodic soils. The dispersed clay particles allow water to pond long enough for hydrophytic vegetation to germinate. Annual grasslands and alkali desert scrub can occur on similar types of soils, but are not exclusively found associated with vernal pools. Once formed, these vernal pools have specific flora and fauna associated with vernal pools. The standing water that forms in vernal pools is ideal breeding habitat for several special-status species, such as vernal pool fairy shrimp (*Brachinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), California tiger salamander (*Ambystoma californiense*), and western spadefoot toad.

The most prominent hydrophytic plants observed in vernal pools in the study areas are several species of goldfields, alkali weed (*Cressa truxillensis*), pepperweed (*Lepidium* spp.), common tarweed, saltgrass, and alkali heath (*Frankenia salina*). Upland areas surrounding the vernal pools are dominated by Menzie's fiddleneck (*Amsinckia menziesii*), bromes, barley, and fescue.

Vernal pool systems are concentrated in the southern part of the Habitat Study Area, south of the city of Corcoran and north of the city of Wasco, on both sides of SR 43 (i.e., Allensworth Area and in the Upper Deer–Upper White watershed). The highest-quality vernal pool habitat occurs south of the town of Alpaugh and northwest of the town of Delano. SR 43 bisects an extensive vernal pool system in this location.

Vernal pool systems north of Alpaugh occur within the BNSF Railway right-of-way. They are generally confined to areas between the railroad tracks and SR 43 or other roadways. These highly disturbed and fragmented habitats are severely limited in their capacity to sustain habitat functions.

Fresh Emergent Wetland

Fresh emergent wetlands are in small patches associated with man-made structures, including detention basins, groundwater recharge reservoirs, and irrigation and drainage ditches. Typical species in these areas include willows, rushes, bulrushes (*Scirpus* spp.), cattails (*Typha* spp.), and docks (*Rumex* spp.). A large complex of fresh emergent wetland exists in the vicinity of Cross Creek. Fresh emergent wetlands outside the Cross Creek area are typically small vegetated areas that experience year-round ponding from irrigation water or, less frequently, from seasonal inundation during the winter rain events.

Other Waters

Other waters include intermittent rivers and creeks, ephemeral watercourses, intermittent to ephemeral sloughs and creeks (watercourses) retention/detention basins, and canals and irrigation ditches. These features can be divided into two categories of other waters that occur within the Habitat Study Area, lacustrine and riverine, which consist of natural and constructed watercourses and basins.

Lacustrine

Lacustrine areas are limited to man-made basins (e.g., retention/detention basins) used for water storage and groundwater recharge. They occur throughout the Habitat Study Area. These basins range in size from less than 1,000 square feet to hundreds of acres. They typically have earthen berms and little or no emergent vegetation. The Habitat Study Area has no natural permanent lakes. One observed large basin was partially bordered by a narrow band of willows, and supported large colonies of nesting birds such as cormorants (*Phalacrocorax* spp.) and egrets (*Egretta* sp. or *Ardea* sp.). Other small basins had little or no sign of use by wildlife. Many of the smaller basins are surrounded by fences that limit wildlife access.

Riverine

Riverine areas consist of open-water or dry channel areas in canals and irrigation ditches, and open-water areas in the flow channel of rivers, such as the Kings and Kern rivers, and creeks, such as the Tule, Cross, and Poso. Because of extensive water diversion for agricultural purposes, riverine habitats in the Habitat Study Area do not exhibit natural flow regimes and may be dry throughout a given year. In these areas, vegetation is either absent or sparse along sandy bottoms because of water-level fluctuations, vehicle disturbance, or maintenance activities in an irrigation canal or ditch. Typical vegetation, when present, is dominated by weedy species such as mustards (*Brassicaceae*) and annual non-native grasses.

C. SPECIAL-STATUS SPECIES

Based on the background review, 55 special-status plant species and 112 special-status wildlife species were evaluated for their potential to occur (Appendix 3.7-A, Attachments 1 and 2). A list

was compiled of the special-status plant and wildlife species with potential to occur in the region based on CNDDDB and CNPS occurrence data, the presence or absence of suitable habitat identified in the Habitat Study Area, and the species' known geographic or elevation range. Each special-status species was ranked as having no potential, low potential, moderate potential, or high potential to occur. Special-status plant species with moderate or high potential to occur in the Special-Status Plant Study Area are listed in Table 3.7-3 and special-status wildlife with moderate or high potential to occur in the Habitat Study Area are listed in Table 3.7-4. Special-status species and potential for occurrence within the biological resources study areas are described in more detail in Appendix 3-7-A, Attachments 1 and 2 and in the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

Table 3.7-3
Special-Status Plant Species with Potential to Occur in the Special-Status Plant Study Area

Scientific Name	Common Name	Federal Status ^a	State/CNPS Status ^b
Federally and State-Listed Species			
<i>Atriplex tularensis</i>	Bakersfield smallscale	—	SE/1B.1
<i>Caulanthus californicus</i>	California jewelflower	FE	SE/1B.1
<i>Chamaesyce hooveri</i>	Hoover's spurge	FT	1B.2
<i>Monolopia congdonii</i>	San Joaquin woolly-threads	FE	1B.2
Other Special-Status Plant Species			
<i>Astragalus hornii</i> var. <i>hornii</i>	Horn's milk-vetch	—	1B.1
<i>Atriplex cordulata</i>	Heartscale	—	1B.2
<i>Atriplex coronata</i> var. <i>vallicola</i>	Lost Hills crownscale	—	1B.2
<i>Atriplex depressa</i>	Brittlescale	—	1B.2
<i>Atriplex erecticaulis</i>	Earlimart orache	—	1B.2
<i>Atriplex minuscula</i>	Lesser saltscale	—	1B.1
<i>Atriplex persistens</i>	Vernal pool smallscale	—	1B.2
<i>Atriplex subtilis</i>	Subtle orache	—	1B.2
<i>Calochortus striatus</i>	Alkali mariposa lily	—	1B.2
<i>Cirsium crassicaule</i>	Slough thistle	—	1B.1
<i>Delphinium recurvatum</i>	Recurved larkspur	—	1B.2
<i>Eriastrum hooveri</i>	Hoover's woolly-star	FD	4.2
<i>Erodium macrophyllum</i> var. <i>macrophyllum</i>	Round-leaved filaree	—	1B.1
<i>Eryngium spinosepalum</i>	Spiny-sepaled button-celery	—	1B.2
<i>Imperata brevifolia</i>	California satintail	—	2.1
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Coulter's goldfields	—	1B.1
<i>Layia munzii</i>	Munz's tidy-tips	—	1B.2
<i>Myosurus minimus</i> ssp. <i>apus</i>	Little mouse tail	—	3.1
<i>Tropidocarpum californicum</i>	King's gold	—	1B.1
<p>Note:</p> <p>"—" signifies "no status designation."</p> <p>This table does not include special-status plant species that were determined to have "No Potential" or "Low Potential" to occur within the Special-Status Plant Study Area.</p> <p>^a Federal Status</p>			

Table 3.7-3
Special-Status Plant Species with Potential to Occur in the Special-Status Plant Study Area

Scientific Name	Common Name	Federal Status ^a	State/CNPS Status ^b
FD: Delisted. Status to be monitored for 5 years FE: Listed as endangered under the Endangered Species Act FT: Listed as threatened under the Endangered Species Act ^b State Status SE: Listed as endangered under the California Endangered Species Act ST: Listed as threatened under the California Endangered Species Act CNPS 1B: Rare, threatened, or endangered in California and elsewhere 2: Rare, threatened, or endangered in California, but more common elsewhere 3: More information is needed 4: Limited distribution or infrequent throughout California 0.1: Seriously endangered in California 0.2: Fairly endangered in California 0.3: Not very endangered in California Abbreviations: CNPS = California Native Plant Society			

Table 3.7-4
Special-Status Wildlife Species with Potential to Occur in the Habitat Study Area

Scientific Name	Common Name	Federal Status ^a	State Status ^b
Federally and State-Listed Species			
<i>Vernal pool fairy shrimp</i>	Vernal pool fairy shrimp	FT, CH	—
<i>Valley elderberry longhorn beetle</i>	Valley elderberry longhorn beetle	FT	—
<i>Vernal pool tadpole shrimp</i>	Vernal pool tadpole shrimp	FE	—
<i>California tiger salamander</i>	California tiger salamander	FT	ST
<i>Blunt-nosed leopard lizard</i>	Blunt-nosed leopard lizard	FE	SE/FP
<i>Golden eagle</i>	Golden eagle	—	FP
<i>Swainson's hawk</i>	Swainson's hawk	—	ST
<i>Western snowy plover</i>	Western snowy plover	FT	CSC
<i>White-tailed kite</i>	White-tailed kite	—	FP
<i>American peregrine falcon</i>	American peregrine falcon	Delisted	SE/FP
<i>Greater sandhill crane</i>	Greater sandhill crane	—	ST/FP
<i>Bald eagle</i>	Bald eagle	Delisted	SE/FP
<i>Nelson's (San Joaquin) antelope squirrel</i>	Nelson's (San Joaquin) antelope squirrel	—	ST
<i>Fresno kangaroo rat</i>	Fresno kangaroo rat	FE	SE
<i>Tipton kangaroo rat</i>	Tipton kangaroo rat	FE	SE
<i>San Joaquin kit fox</i>	San Joaquin kit fox	FE	ST
Other Special-Status Wildlife Species			
<i>Lampetra hubbsi</i>	Kern brook lamprey	—	CSC
<i>Spea (=Scaphiopus) hammondi</i>	Western spadefoot	—	CSC
<i>Actinemys (=Clemmys/Emys) marmorata</i>	Western pond turtle	—	CSC
<i>Anniella pulchra pulchra</i>	Silvery legless lizard	—	CSC
<i>Masticophis flagellum ruddocki</i>	San Joaquin whipsnake	—	CSC
<i>Phrynosoma coronatum frontale</i>	Coast (California) horned lizard	—	CSC

Table 3.7-4
Special-Status Wildlife Species with Potential to Occur in the Habitat Study Area

Scientific Name	Common Name	Federal Status ^a	State Status ^b
<i>Agelaius tricolor</i>	Tricolored blackbird	—	CSC
<i>Ammodramus savannarum</i>	Grasshopper sparrow	—	CSC
<i>Asio flammeus</i>	Short-eared owl	—	CSC
<i>Asio otus</i>	Long-eared owl	—	CSC
<i>Athene cunicularia</i>	Western burrowing owl	—	CSC
<i>Aythya americana</i>	Redhead	—	CSC
<i>Baeolophus inornatus</i>	Oak titmouse	BCC	—
<i>Charadrius montanus</i>	Mountain plover	—	CSC
<i>Chlidonias niger</i>	Black tern	—	CSC
<i>Circus cyaneus</i>	Northern harrier	—	CSC
<i>Coturnicops noveboracensis</i>	Yellow rail	BCC	CSC
<i>Dendrocygna bicolor</i>	Fulvous whistling duck	—	CSC
<i>Dendroica petechia brewsteri</i>	Yellow warbler	—	CSC
<i>Grus canadensis canadensis</i>	Lesser sandhill crane	—	CSC
<i>Icteria virens</i>	Yellow-breasted chat	—	CSC
<i>Ixobrychus exilis</i>	Least bittern	—	CSC
<i>Lanius ludovicianus</i>	Loggerhead shrike	—	CSC
<i>Melanerpes lewis</i>	Lewis's woodpecker	BCC	—
<i>Numenius americanus</i>	Long-billed curlew	BCC	—
<i>Picoides nuttallii</i>	Nuttall's woodpecker	BCC	—
<i>Poocetes gramineus affinis</i>	Oregon vesper sparrow	—	CSC
<i>Progne subis</i>	Purple martin	—	CSC
<i>Toxostoma lecontei</i>	Le Conte's thrasher	—	CSC
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed blackbird	—	CSC
<i>Antrozous pallidus</i>	Pallid bat	—	CSC
<i>Chaetodipus californicus femoralis</i>	Dulzura pocket mouse	—	CSC
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	—	CSC
<i>Eumops perotis californicus</i>	Western mastiff bat	—	CSC
<i>Lasiurus blossevillii</i>	Western red bat	—	CSC
<i>Onychomys torridus tularensis</i>	Tulare grasshopper mouse	—	CSC
<i>Taxidea taxus</i>	American badger	—	CSC
<p>Notes:</p> <p>^a Federal Status FE – Endangered FT – Threatened CH – Critical Habitat designated by the U.S. Fish and Wildlife Service BCC – Birds of Conservation Concern designated by the U.S. Fish and Wildlife Service</p> <p>^b State Status SE – Endangered ST – Threatened CSC – California Species of Special Concern designated by the California Department of Fish and Game FP – Fully Protected species designated by the California Department of Fish and Game</p>			

D. HABITATS OF CONCERN

Habitats of concern evaluated in the Habitat Study Area include special-status plant communities, jurisdictional waters, critical habitat, essential fish habitat, conservation areas (i.e., Recovery Plan areas for federally listed species, conservation easements, public lands, conservation banks, and

HCPs), and wildlife movement corridors. Habitats of concern in the Habitat Study Area receive special protection by federal, state, and local regulations. These habitats of concern, discussed below, are depicted on Figures 3.7-1a and 3.7-1b.

Special-Status Plant Communities

For the purposes of this EIR/EIS, special-status plant communities consist of two types of vegetation assemblages: (1) riparian communities, which are dominated by native woody vegetation and are adjacent to rivers and streams; and (2) sensitive natural communities, as defined by the CDFG, which are communities of limited distribution statewide or within a county or region. One riparian community, Valley Foothill Riparian, was identified in the Habitat Study Area (Figure 3.7-1a). Six sensitive natural vegetation communities were identified in the Special-Status Plants Study Area (Figure 3.7-1a):

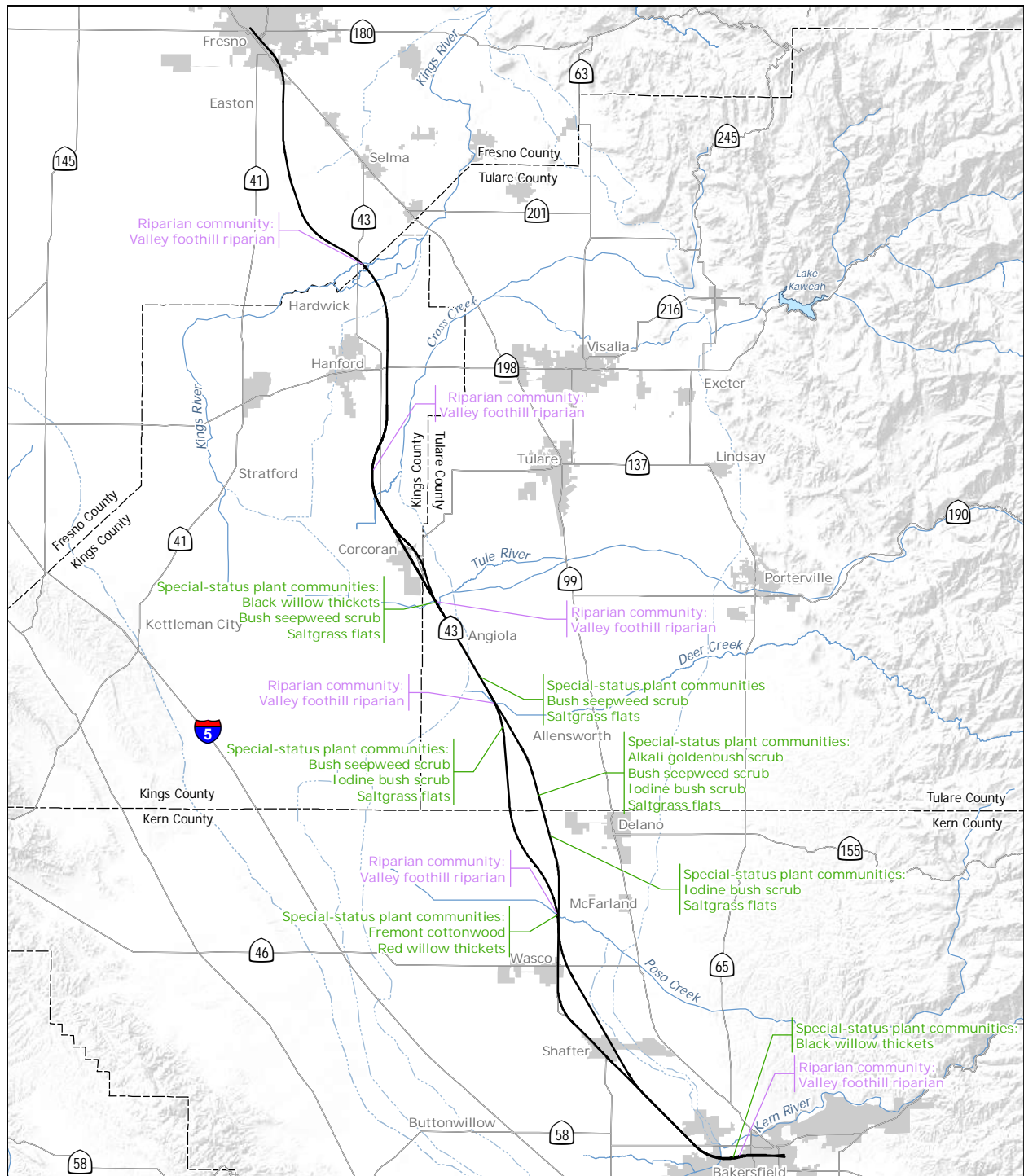
- Black willow thickets (*Salix gooddingii* Woodland Alliance).
- Bush seepweed scrub (*Suaeda moquinii* Shrubland Alliance).
- Fremont cottonwood forest (*Populus fremontii* Forest Alliance).
- Iodine bush scrub (*Allenrolfea occidentalis* Shrubland Alliance).
- Red willow thickets (*Salix laevigata* Woodland Alliance).
- Saltgrass flats (*Distichlis spicata* Herbaceous Alliance).

Special-status plant communities are described in more detail in the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

Jurisdictional Waters

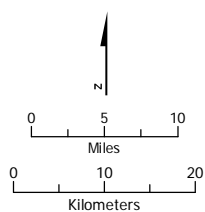
Jurisdictional waters, including watercourses as described above, are afforded protection under federal and state laws by the USACE, CDFG, and RWQCB. Jurisdictional waters are generally considered an important resource for various plant and wildlife species and are discussed in Sections 3.7.5 and 3.7.6. These sections discuss jurisdictional waters in relation to regulatory permitting requirements concerning temporary and permanent impacts during ground-disturbing activities.

Waters, including waters of the United States, waters of the state, and state streambeds and lakes, which are considered jurisdictional, are described in Section 3.7.1(A), Key Definitions. Permitting and compliance related to the CWA and Section 1600 of the CFGC are discussed in Section 3.7.6. The regulatory permitting process under the CWA and Section 1600 of the CFGC also triggers the need for compliance with the federal ESA, CESA, Section 402 of the CWA, MBTA, and Section 106 of the National Historic Preservation Act.



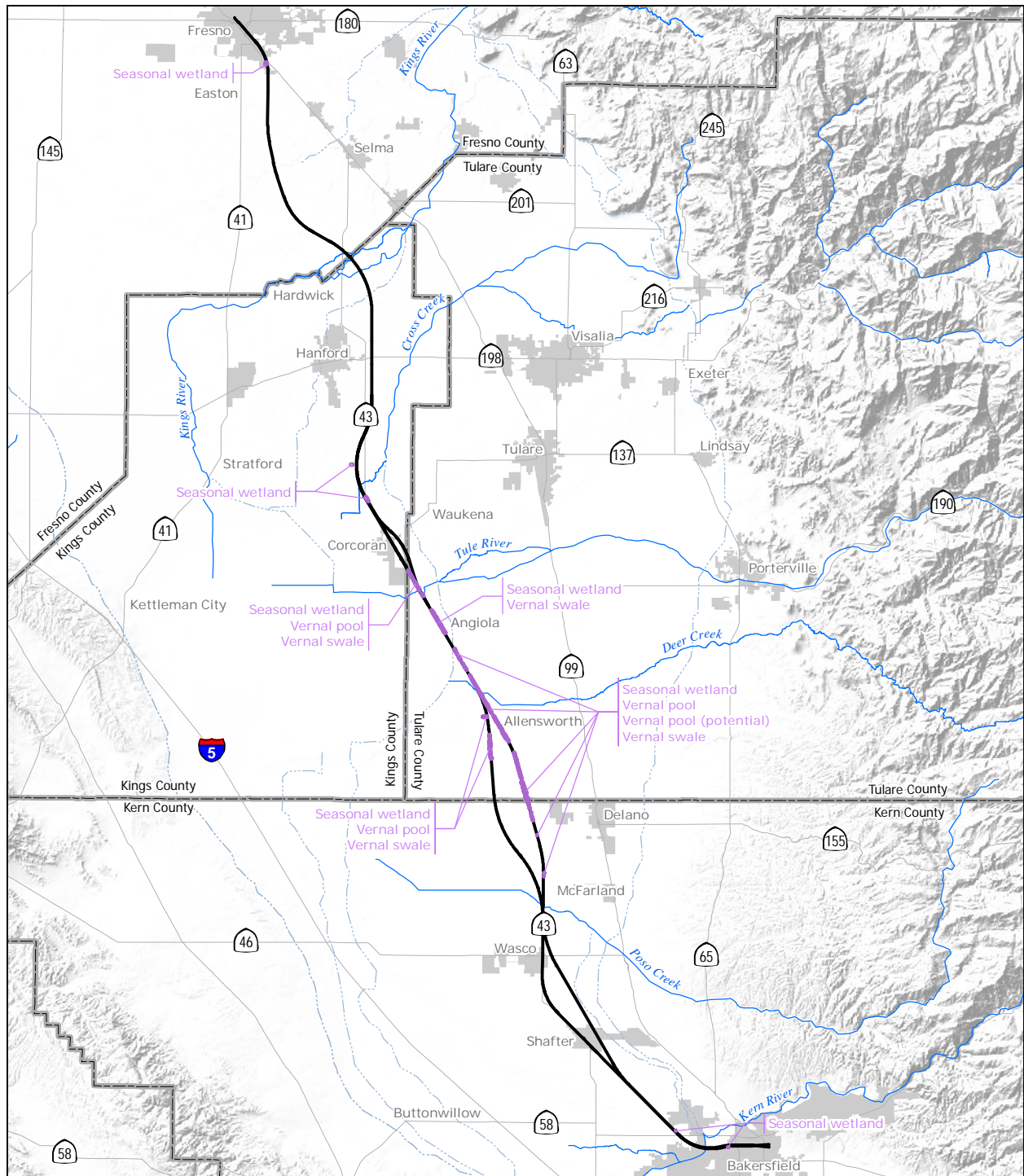
PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED
Data source: URS, 2011

June 26, 2011



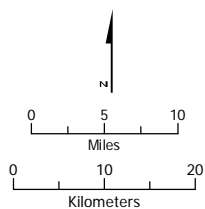
- Alternative alignment
- Stream/River
- Canal/Aqueduct
- Highway
- - - County boundary
- Community/Urban area

Figure 3.7-1a
Habitats of concern observed within
Special-Status Plants Study Area
(special-status plant communities)



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED
Data source: URS, 2011

June 28, 2011



- | | |
|---|--|
| — Vernal/Seasonal wetland | — Alternative alignments |
| — Stream/River | — Highway |
| --- Canal/Aqueduct | County boundary |
| | Community/Urban area |

Figure 3.7-1b
Habitats of concern observed
within Wetlands Study Area
(jurisdictional waters)

A number of jurisdictional waters were identified in the Wetland Study Area, including wetlands, other waters of the United States, waters of the state, and state streambeds. Identified wetland features include seasonal wetlands, vernal pools, and retention/detention basins. Other waters of the United States and waters of the state identified in the Wetland Study Area include canals, ditches, reservoirs, retention and detention basins, and seasonal riverine. In addition to the wetlands and other waters of the United States, waters of the state also include ditches and riparian areas. Additional jurisdictional waters were identified in the field (Figure 3.7-1b). Jurisdictional waters are described in more detail in the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

Critical Habitat

Critical habitat as defined by the federal ESA includes designated areas that provide federally listed species with suitable habitat and which have the geographical locations and physical features essential to the conservation of a particular species. The federal ESA defines conservation as “all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter [the federal ESA] are no longer necessary” (16 U.S.C. Section 1532[3]). Critical habitat is present in the Habitat Study Area for the vernal pool tadpole shrimp (Figure 3.7-1c).

Critical habitat is described in more detail in the *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c).

Essential Fish Habitat

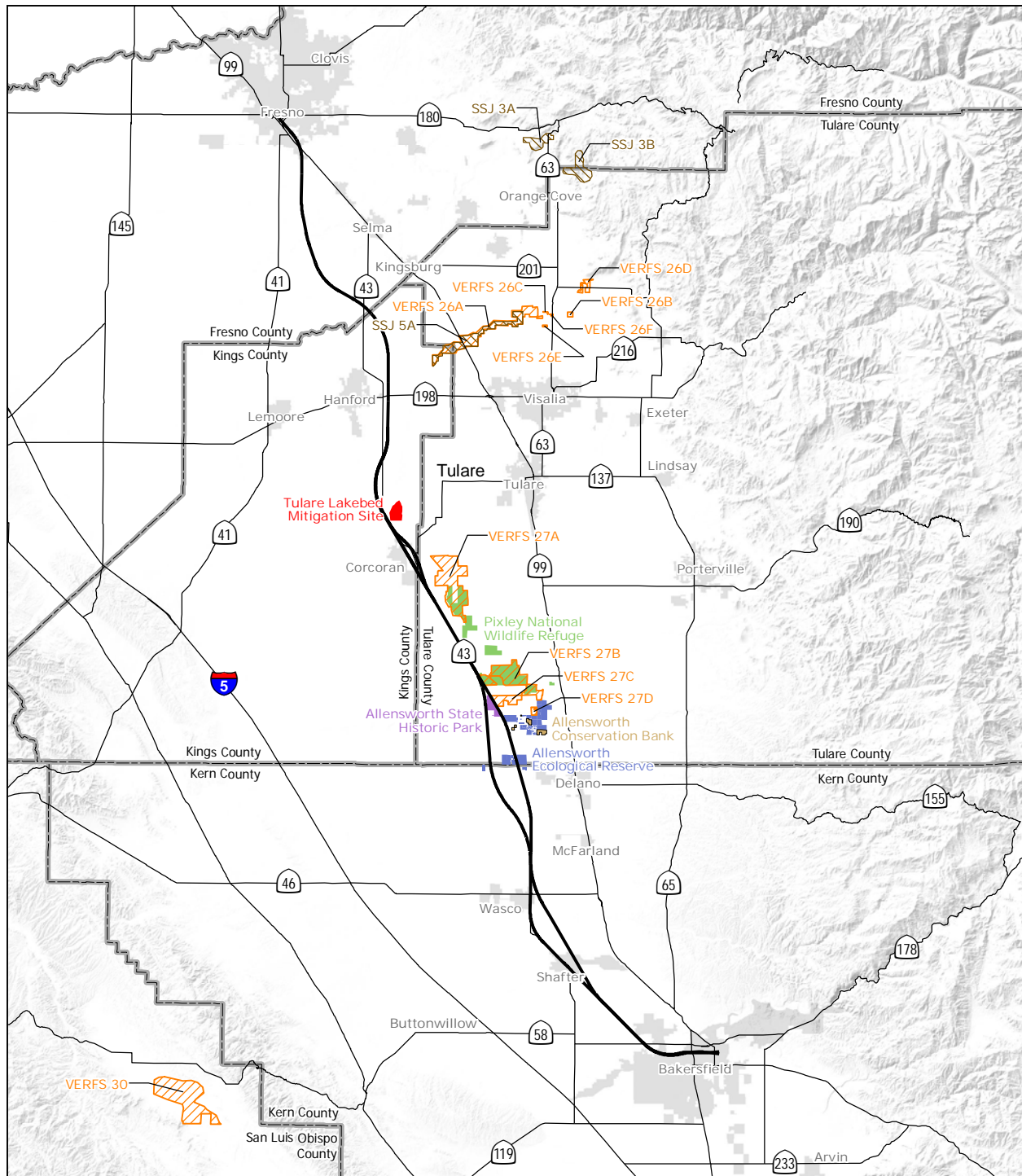
No special-status fish species covered by the Magnuson-Stevens Fisheries Conservation and Management Act have the potential to occur in the Habitat Study Area. Therefore, the Fresno to Bakersfield HST project does not overlap Essential Fish Habitat and Essential Fish Habitat is not discussed further in this document.

Conservation Areas

Conservation areas include Recovery Plans for federally listed species, conservation easements, public lands, conservation banks, and HCPs.

Recovery Plans for Federally Listed Species

Two recovery plans address federally protected species with the potential to occur in the region: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998) and *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). The study areas overlap core vernal pool areas identified by the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005) near Pixley NWR and Allensworth ER (Figure 3.7-1d), and satellite and linkage areas identified by the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (Figure 3.7-1d). Table 3.7-5 presents the special-status species included in the recovery plans that have the potential to occur in the alternative alignments. Satellite and linkage areas from the *Recovery Plan for Upland Species of the San Joaquin Valley, California*, are discussed in Section 3.7.4(E).



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED

June 28, 2011

*Note: SSJ indicates Southern San Joaquin; VERFS indicates Vernal pool fair shrimp

Source: Critical habitat - U.S. Fish and Wildlife Service, 2003, 2005; Public lands - Conservation lands - Wildlands, INC; Kaweah delta water conservation district

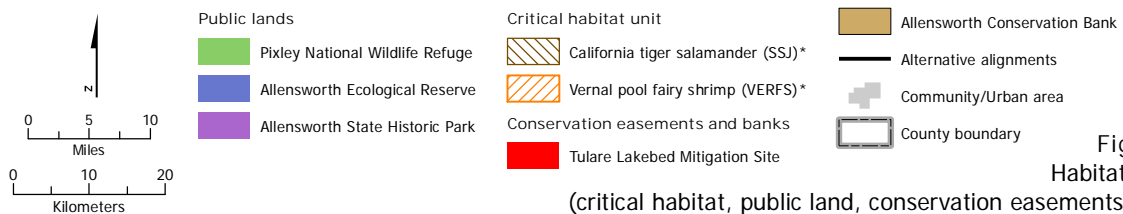
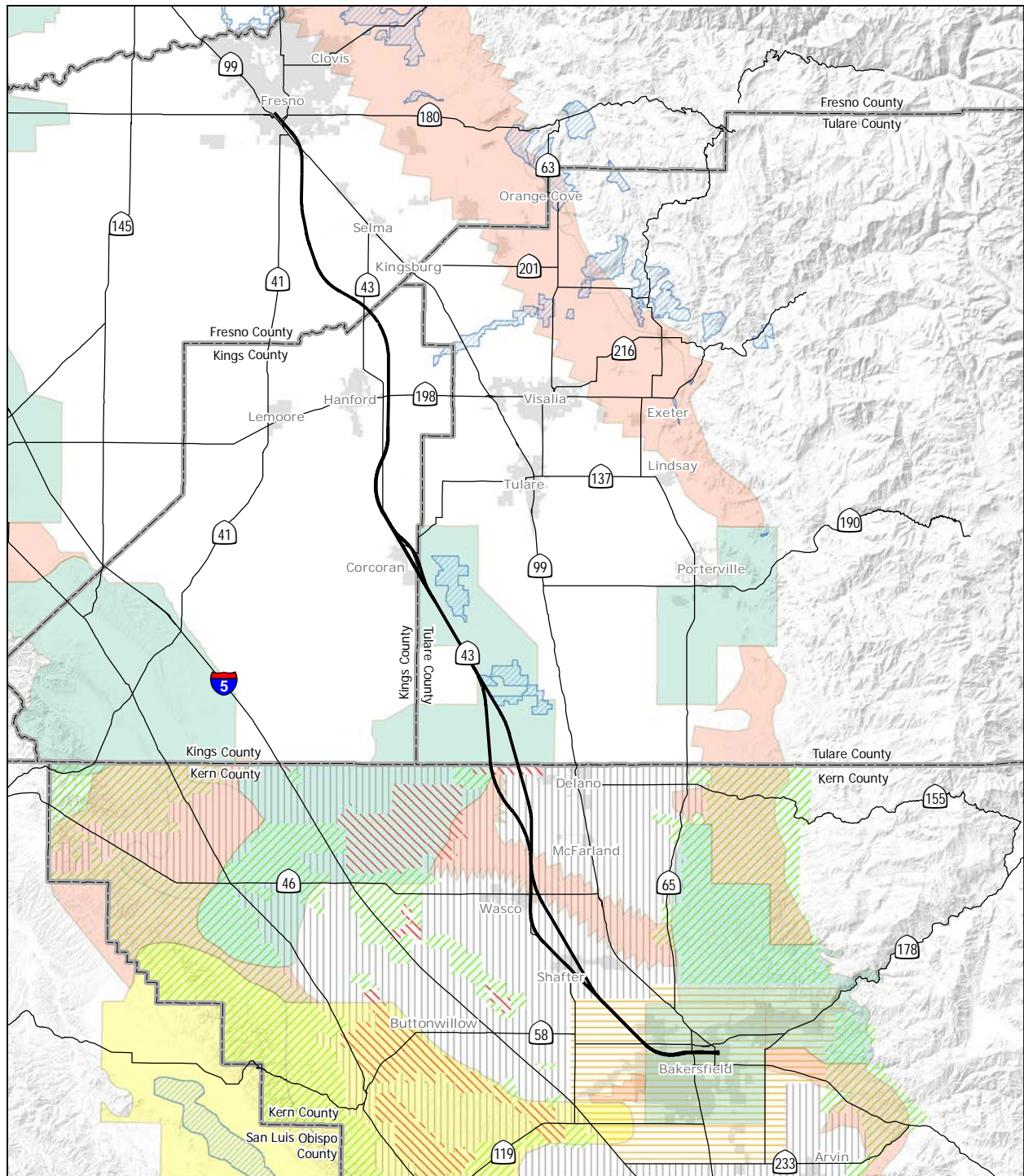


Figure 3.7-1c
Habitats of concern
(critical habitat, public land, conservation easements, and banks)



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED
 Source: HCP - Metropolitan Bakersfield HCP, 1994; First public draft county valley floor HCP, 2006
 Recovery Plan - U.S. Fish and Wildlife Service, 1998, 2005, and 2010

June 27, 2011

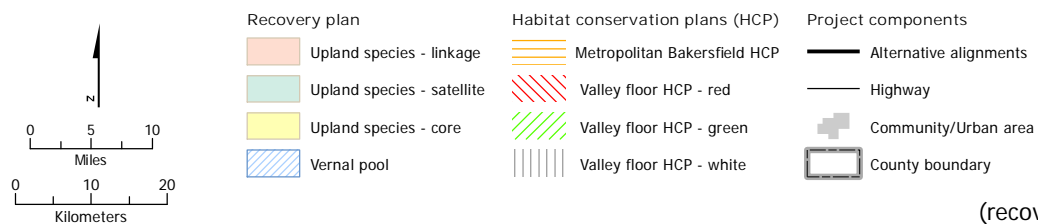


Figure 3.7-1d
 Habitats of concern
 (recovery plans and HCPs)

Table 3.7-5
Special-Status Species Included in Recovery Plans

Recovery Plan	Wildlife Species	Plant Species
<i>Recovery Plan for Vernal Pool Ecosystems in California and Southern Oregon, San Joaquin Valley Vernal Pool Region^a</i>	Vernal pool fairy shrimp, vernal pool tadpole shrimp, western spadefoot toad	Hoover's spurge (<i>Chamaesyce hooveri</i>), San Joaquin Valley vernal pool smallscale (<i>Atriplex persistens</i>), Lost Hills crownscale (<i>Atriplex coronata</i> var. <i>vallicola</i>), little mouse tail (<i>Myosurus minimus</i> ssp. <i>apus</i>), Orcutt grass (<i>Orcuttiana equalis</i>), Green's tuctoria (<i>Tuctoria greeneri</i>)
<i>Recovery Plan for Upland Species of the San Joaquin Valley, California^b</i>	Blunt-nosed leopard lizard, Nelson's (San Joaquin) antelope squirrel (<i>Ammospermophilus</i> sp.), Fresno kangaroo rat (<i>Dipodomys nitratoides exilis</i>), Tipton kangaroo rat, San Joaquin kit fox, Le Conte's thrasher (<i>Toxostoma le contei</i>), Tulare grasshopper mouse (<i>Onychomys torridus tularensis</i>)	Bakersfield smallscale (<i>Atriplex tularensis</i>), California jewelflower (<i>Caulanthus californicus</i>), Kern mallow (<i>Eremalche kernensis</i>), San Joaquin woolly threads (<i>Lembertia congdonii</i>), Bakersfield cactus (<i>Opuntia basilaris</i> var. <i>treleasei</i>), lesser saltscale (<i>Atriplex minuscula</i>), Hoover's woolly-star (<i>Eriastrum hooveri</i>), spiny-sepaled button-celery (<i>spiny sepal eryngo</i>), Munz's tidy-tips (<i>Layia munzii</i>), Comanche Point layia (<i>Layia leucopappa</i>), Panoche peppergrass (<i>Lepidium jaredii</i> ssp. <i>album</i>)
^a USFWS 2005. ^b USFWS 1998.		

Conservation Easement

Tulare Lakebed Mitigation Site

A conservation easement, the Tulare Lakebed Mitigation Site, in the vicinity of Cross Creek, has been identified near the study areas (Figure 3.7-1c). The Tulare Lakebed Mitigation Site was placed into a conservation easement as mitigation for the Lake Kaweah Enlargement Project and provides habitat for shorebirds and other migrating water fowl. The conservation area is approximately 1,300 acres (Figure 3.7-1c). The Fresno to Bakersfield HST alignment alternatives were designed to avoid the Tulare Lakebed Mitigation Site; therefore, the Tulare Lakebed Mitigation Site is not discussed further in this document.

Public Lands

Pixley National Wildlife Refuge

The Pixley NWR is located in Tulare County, just south of the Tule River (Figure 3.7-1c). The 6,389-acre refuge represents one of the few remaining examples of the grasslands, vernal pools, and playas that once bordered historic Tulare Lake. Over 100 bird and 6 reptile species use the refuge. Approximately 300 acres of managed wetlands provide habitat for migratory waterfowl and shorebirds. USFWS' primary management focus for the refuge is to maintain and restore native habitats including wetlands and upland habitat (USFWS 2009). The Pixley NWR is located

near the HST alternatives (i.e., BNSF Alternative, Allensworth Bypass [1,000 feet west of Pixley NWR]), but the HST alternatives do not overlap this NWR (Figure 3.7-1c). The construction of the HST alternatives would not result in direct impacts. Because of the considerable distance and the existing SR 43 and BNSF barriers, no indirect impacts are expected to occur to this NWR. Additional information about Pixley NWR can be found in Section 3.15, Parks, Recreation, and Open Space.

Allensworth State Historic Park

The Allensworth State Historic Park (Allensworth SHP) is located in Tulare County, near the town of Allensworth, which was the only California town to be founded, financed, and governed by African-Americans. The 240-acre historical park contains several homes, a bakery, blacksmith area, drugstore, barber shop, post office, library, hotel, schoolhouse, Baptist church, restaurant, various farm buildings, and several other buildings, which were reconstructed to reflect the 1908 to 1918 historical period (California State Parks 2009). The primary management focus is the preservation, development, and interpretation of resources of the historical community of Allensworth. The BNSF Alternative is located on the far eastern boundary of the Allensworth SHP. The Allensworth Bypass Alternative would occur approximately 0.5 mile west of the Allensworth Ecological Reserve (ER) (Figure 3.7-1c). Construction period impacts and project impacts on Allensworth SHP are discussed under Section 3.15, Parks, Recreation, and Open Space.

Allensworth Ecological Reserve

Allensworth ER is managed by the CDFG and is composed of a number of fragmented parcels in southern Tulare County and northern Kern County (Figure 3.7-1c). The approximate 5,056 acres in the Allensworth ER contain a number of biological resources, including special-status plant communities, wetlands, and special-status plant and wildlife species. The reserve is open to the public for wildlife viewing (CDFG 2010). A portion of the Allensworth ER located immediately west of the SR 43 occurs in the BNSF Alternative. Additional information about Allensworth ER can be found in Section 3.15, Parks, Recreation, and Open Space.

Conservation Bank

Allensworth Conservation Bank

Conservation banks are large blocks of land that are preserved, restored, and enhanced for the purpose of mitigating for projects that take special-status species, wetlands, or other vegetated biological communities. One conservation bank, the Allensworth Conservation Bank, is located in the project vicinity; however, this bank is outside the study areas (Figure 3.7-1c).

Habitat Conservation Plans

As stated earlier, a Habitat Conservation Plan must accompany an incidental take permit under Section 10 of the federal ESA. Two conservation plans have been identified in the project vicinity: the *Metropolitan Bakersfield Habitat Conservation Plan* (MBHCP) and the draft *Valley Floor Habitat Conservation Plan* (VFHCP) (City of Bakersfield and Kern County 1994; Kern County Planning Department 2006) (see Figure 3.7-1d).

Protected Trees

Mapping of more than 1,500 trees in the Special-Status Plant Study Area was based on field surveys and GIS analysis of potential tree locations. A number of these trees are protected under the various local ordinances, regulations, and policies. Where possible, these trees have been categorized based on nativity and local government policies, ordinances, and regulations. Many of the trees identified are landscape and ornamental trees that are located in the urban

environment throughout the Special-Status Plant Study Area. Native trees observed (that are afforded protection) include valley oaks or Fremont cottonwoods. The *Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report* (Authority and FRA 2011c) contains more details regarding the methods, types, and locations of protected trees in the Special-Status Plant Study Area.

Additional trees may be present in areas where permission to enter was not granted. While the tree counts must be considered approximate, they remain useful for a comparison of the alternatives under consideration.

E. WILDLIFE MOVEMENT CORRIDORS

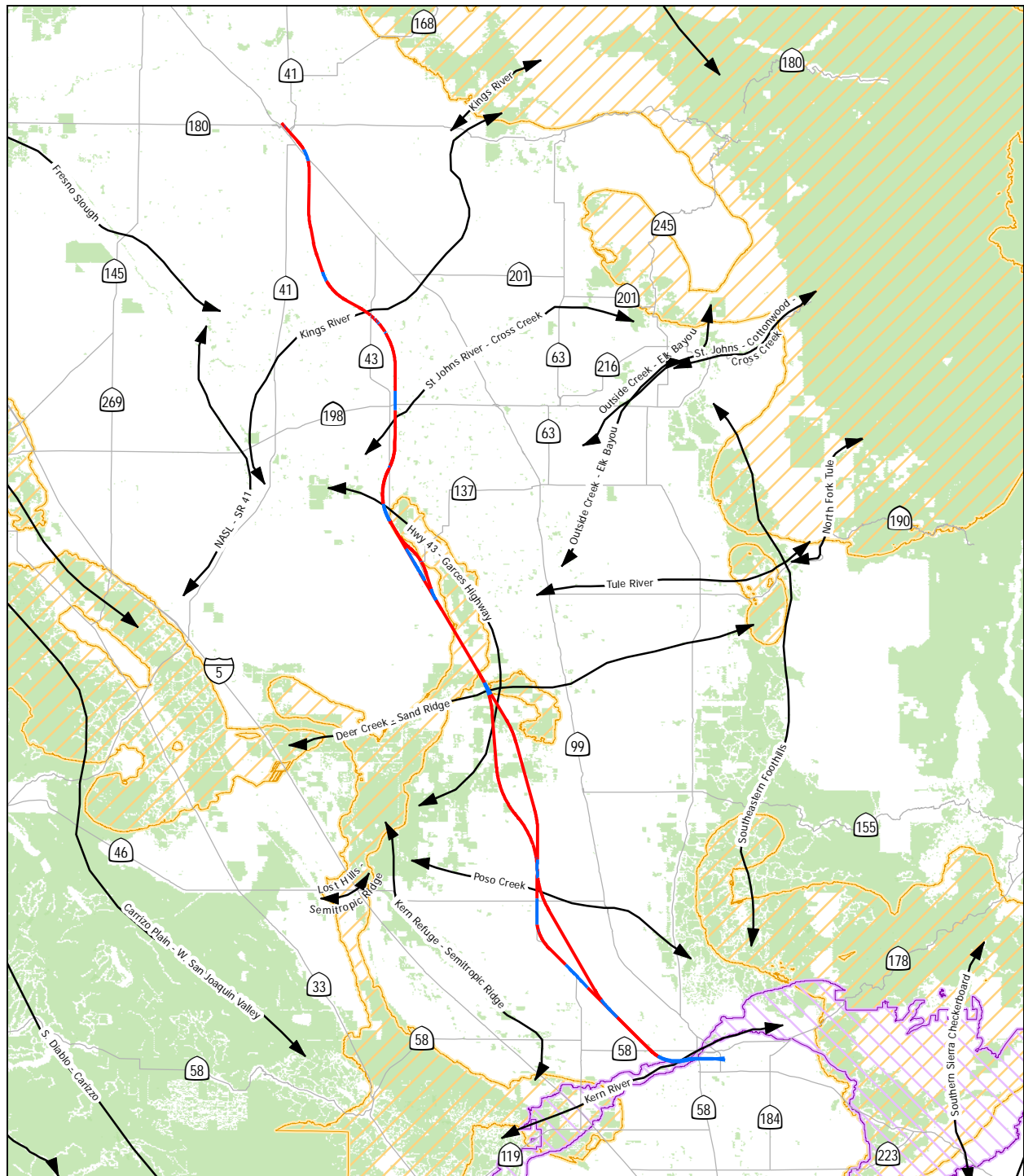
Wildlife linkages are planning areas that, among other services, provide broad connections for wildlife movement between two or more habitat areas. The term “wildlife linkage” is commonly used as a synonym for a wildlife movement corridor. However, wildlife movement corridors are physical connections that allow wildlife to move between patches of suitable habitat. Multiple habitat linkages that could potentially function as wildlife movement corridors have been identified as part of recent state- and regional-level studies addressing connectivity and wildlife movement in California (Penrod, Hunter, and Merrifield 2001; Penrod et al. 2003; Endangered ESRP 2009; USFWS 1998; Spencer et al. 2010). Collectively, these studies identify six major linkage areas that intersect the HST alternatives (shown on Figure 3.7-2) and that could serve as movement corridors at the following general locations:

- Kings River linkage (connectivity choke-point linkage).
- St. John's River–Cross Creek linkage (landscape linkage).
- SR 43/SR 155 linkage (missing linkage).
- Deer Creek–Sand Ridge linkage (connectivity choke-point/missing linkage).
- Poso Creek linkage (missing linkage).
- Kern River linkage (connectivity choke-point linkage).

A connectivity choke point is a narrow, impacted, or otherwise tenuous habitat linkage connecting two or more habitat blocks. A missing linkage is a linkage that currently provides little to no connectivity but could provide connectivity in the future if enhanced or restored. A landscape linkage is an area not currently constricted and identified as essential for the functioning of an eco-region (Penrod, Hunter, and Merrifield 2001).

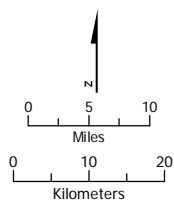
The Kings River linkage is primarily an east-west linkage that follows the Kings River drainage (Penrod et al. 2001) and is approximately 60 miles long. This linkage may provide suitable habitat for a variety of special-status species. The Kings River riparian corridor linkage intersects the BNSF Alternative.

The St. John's River–Cross Creek linkage is a north-south linkage that follows the Cross Creek riparian corridor (Penrod, Hunter, and Merrifield 2001) and is approximately 36 miles long. The primary habitat types in this linkage were identified as valley oak, riparian forest, mixed riparian forest, grassland, and alkali sink. Conservation opportunities are good because the land is currently part of a formal conservation plan. The *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998) and conservation partnership potentials are already in place between the CDFG, Corcoran Irrigation District, and the Endangered Species Recovery Program (Penrod, Hunter, and Merrifield 2001). The Cross Creek riparian corridor linkage intersects the BNSF and Corcoran Bypass alternatives.



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED
 Sources: Missing Linkages - K. Penrod et al., 2001
 South Coast Wildlands - K. Penrod et al., 2003
 California Essential Habitat Connectivity - W.D. Spencer et al., 2010

June 24, 2011



- | | |
|------------------------|---|
| Alternative alignments | Missing Linkages |
| — At-grade | ↔ California linkage |
| — Elevated | California Essential Habitat Connectivity |
| South Coast Wildlands | Corridor |
| Linkage | Natural landscape block |

Figure 3.7-2
 Wildlife movement corridors

The SR 43/SR 155 linkage is primarily a north-south linkage, which closely follows SR 43 and SR 155. This linkage connects, among other natural areas, the Kern NWR, the Pixley NWR, and other undisturbed tracts of land scattered throughout the San Joaquin Valley (Penrod, Hunter, and Merrifield 2001). The SR 43/SR 155 linkage also connects the Pixley/Allensworth, Lost Hills, and Semitropic Ridge satellite areas, which are identified in the *Recovery Plan for Upland Species of the San Joaquin Valley* (USFWS 1998). The SR 43/SR 155 linkage is approximately 20 miles long. The primary habitat types in the linkage were identified as alkali sink scrub, valley grassland, and saltbush scrub. The major land cover types are agriculture and natural vegetation. The most significant barriers to wildlife movement are natural habitat gaps up to several miles long. Given that several thousand acres in this area need to be restored from agricultural land to natural communities for this linkage to function, the need for restoration in this area is extensive (Penrod, Hunter, and Merrifield 2001).

The Deer Creek–Sand Ridge linkage, which was identified in the vicinity of Allensworth, is a primarily east-west linkage that connects the Sequoia Foothills core area with the Kreyenhagen and Kettleman Hills core area identified in the *Recovery Plan for Upland Species of the San Joaquin Valley* (USFWS 1998). The Deer Creek–Sand Ridge linkage also intersects portions of the Pixley/Allensworth, Lost Hills, and Semitropic Ridge satellite areas identified in the *Recovery Plan for Upland Species of the San Joaquin Valley* (USFWS 1998) and two essential connectivity areas identified by the *California Essential Habitat Connectivity* project that connect the Pixley/Allensworth reserves with the Carrizo Plain/Kettleman Hills natural landscape blocks (Spencer et al. 2010). The Deer Creek–Sand Ridge linkage is approximately 25 miles long. The primary habitat types present in the linkage are riparian, grassland, vernal pool marshes, and dunes. The Allensworth area linkage intersects the BNSF Alternative (near Allensworth) and the Allensworth Bypass Alternative.

The Poso Creek linkage is primarily an east-west linkage that follows the Poso Creek riparian corridor, (Penrod, Hunter, and Merrifield 2001) and is approximately 35 miles long. This linkage connects the northeast Bakersfield to the Kreyenhagen and Kettleman Hills populations of the San Joaquin kit fox, identified in the *Recovery Plan for Upland Species of the San Joaquin Valley* (USFWS 1998). The Poso Creek linkage was also identified in the Recovery Plan as a linkage connecting populations of San Joaquin kit fox between Bakersfield and the Pixley/Allensworth, Lost Hills, and Semitropic Ridge areas that run along Poso Creek (USFWS 1998). Major habitat types in the linkage were identified as riparian and upland habitat, and the major land cover type in and surrounding the linkage is agricultural. Major barriers to wildlife include gaps in habitat cover from 1 to 5 miles in length. The features that currently facilitate wildlife movement include underpasses as well as bridges over a major highway (SR 99). The Poso Creek linkage intersects the BNSF and Wasco-Shafter Bypass alternatives.

The Kern River linkage is primarily an east-west linkage that follows the Kern River riparian corridor (Penrod, Hunter, and Merrifield 2001) and is approximately 30 miles long. This linkage connects the western areas identified in the *Recovery Plan for Upland Species of the San Joaquin Valley* (USFWS 1998). Major habitat types in the linkage were identified as riparian and upland, and the major land cover types were natural vegetation, agricultural land, and urban development. The most significant barriers to wildlife movement were identified as gaps in riparian habitat and water impoundments, which potentially restrict the movement of terrestrial species across areas that formerly had only intermittent water flow (Penrod, Hunter, and Merrifield 2001). The linkage is currently part of the *Recovery Plan for Upland Species of the San Joaquin Valley* (USFWS 1998). The Kern River riparian corridor linkage intersects the BNSF and Bakersfield South alternatives.

The Pacific Flyway is a common route of bird migration that extends along the west coast of North and South America from Alaska to Patagonia, and from pelagic areas of the Eastern Pacific to the Great Basin. This flyway spans the most of California, including the project footprint. The

Fresno to Bakersfield Section: Biological Resources and Wetlands Technical Report (Authority and FRA 2011c) provides a detailed summary of the six major linkage areas, including the key species used to identify the linkage areas.

3.7.5 Environmental Consequences

A. OVERVIEW

Under the No Project Alternative, existing development trends affecting biological resources are expected to continue and potentially further directly degrade some natural systems because development, such as new residential communities and transportation infrastructure, would convert undeveloped habitat to other uses. In addition, development would indirectly degrade remaining habitat through pollution, noise, and dust. Special-status species would be threatened with mortality from vehicle strikes, would result from the increased loss, fragmentation, or impact on habitats of concern and wildlife movement corridors.

The HST alternative alignments (i.e., BNSF, Corcoran Elevated, Corcoran Bypass, Allensworth Bypass, Wasco-Shafter Bypass, and Bakersfield South), HMF alternatives, and station alternatives would result in direct and indirect impacts on biological resources as a result of both construction period impacts and project impacts. The construction of HST alternatives would result in temporary direct or indirect impacts through the disturbance or removal of lands that have been determined to support or could potentially support special-status species, affect habitats of concern, or interfere with wildlife movement corridors. Project activities associated with the HST alternatives would result in permanent direct and indirect impacts on special-status species, habitats of concern, and obstruct wildlife movement corridors.

Construction period impacts and project impacts associated with the HST alternative alignments, HMF alternatives, and station alternatives would result in effects on biological resources, including special-status species, habitats of concern, and wildlife movement corridors.

The implementation of the Corcoran Elevated, Corcoran Bypass, Allensworth Bypass, Wasco-Shafter Bypass, and Bakersfield South alternatives would require the use of the remaining segments of the BNSF Alternative and the overall effect determinations are the same as those for the BNSF Alternative. In one instance the anticipated effects on a particular resource are either reduced or magnified by the use of the alternative when combined with the remaining segments of the BNSF Alternative. That is, the use of the Allensworth Bypass Alternative, as opposed to the corresponding segment of the BNSF Alternative, would result in no effect on Allensworth Ecological Reserve.

The determinations for the HMF alternatives and the station alternatives are independent of each other.

Construction of any of the HST alternative alignments, the HMF alternatives, and the station alternatives would require permitting under federal, state, and local regulatory processes, including the federal CWA (Sections 401, 402, and 404), California Fish and Game Code (Streambed Alteration Agreement/Section 1600), California ESA (2081 Incidental Take Permit), and the federal ESA (Section 7).

B. NO PROJECT ALTERNATIVE

Under the No Project Alternative, existing trends affecting biological resources are expected to continue or worsen, including habitat loss from development, mortality from vehicle strikes, habitat degradation from pollution (e.g., polluted runoff from stormwater, inadvertent spills of hazardous materials), and noise and dust from development. Existing regulatory programs, such as the CWA and conservation programs (e.g., establishment of conservation easements and

mitigation banks), would continue to abate the amount of habitat loss and degradation if feasible. Effects that are expected to continue to occur are as follows:

- Changes in crop production and rotation would continue to improve or degrade habitat conditions for species that forage or nest on farmland.
- Transportation agencies would implement programmed and funded improvements to the intercity transportation system through 2035 (see Section 3.2, Transportation). In some cases, widening existing corridors or new improvements could result in additional impacts on biological resources. Each of these improvement projects would be subject to environmental impact analysis and evaluation of the impacts of habitat loss, habitat degradation, and “take” of special-status species. Impacts on biological resources and jurisdictional waters would be mitigated as part of those projects, including avoidance of “take” during construction, minimization of impacts during construction and operation, restoration of disturbed sites, and preservation of compensatory habitat.
- Development pressure would continue in Fresno, Kings, Tulare, and Bakersfield counties (see Section 3.13, Station Planning, Land Use, and Development, and Section 3.18, Regional Growth). Low-density development on the urban fringe would likely continue and potentially result in the loss of habitat in these currently undeveloped areas, including high-value habitat such as wetlands and riparian areas. Current and future conservation easements on properties near urban boundaries would protect some areas. Impacts on biological resources and jurisdictional waters would be avoided, reduced, and, in accordance with permit requirements for the development projects, be mitigated, through the preservation of compensatory habitat and restoration of disturbed sites. For example, some local projects that are in various stages of planning include the development of a 900-acre sand and gravel extraction operation, the 220-acre expansion of the Sanger-Centerville aggregate mining operation, a regional shopping center, and an 889-acre residential, commercial, and recreational development in Bakersfield. These and similar-type projects will continue to have some impact on the wildlife, wetlands, including vernal pools, native vegetation, oak woodland, and non-native grassland biological resources in local areas between Fresno and Bakersfield.

In addition, the historical trend of converting native plant communities to agricultural production has compromised the biological complexity of the region. While the No Project Alternative does not propose changes that would directly contribute to the addition of the built environment, the loss of native plant communities will likely continue with the No Project Alternative. Foreseeable projects that are planned, committed, or are otherwise part of a general plan or specific plan would continue the trend of converting open spaces with native plant communities to more urban uses.

C. HIGH-SPEED TRAIN ALTERNATIVES

This section describes the potential effects on biological resources for the HST alternatives. Mitigation measures for effects and impacts on biological resources are listed in Section 3.7.7. Impacts associated with construction activities would result in temporary impacts, whereas activities during project operation would result in permanent impacts on biological resources. Construction period impacts and project (operation) impacts are defined in Section 3.1.

Impacts on natural lands could result in direct and indirect effects on a number of biological resources including special-status plant and wildlife species, habitats of concern (encompasses jurisdictional waters), and wildlife movement corridors. Urban and agricultural lands affected by the construction are not expected to provide conditions that support special-status plant species or special-status plant communities; to provide preferred habitat for special-status wildlife

species; to support high-quality jurisdictional waters; or to facilitate the movement or migration of wildlife species. However, these areas often contain degraded or marginal habitats for a number of special-status wildlife species and in some instances support jurisdictional waters (specifically retention and detention basins), and are used for movement and migration by a number of wildlife species. Direct, and in some instances indirect, impacts associated with urban, agricultural, and natural lands are described for the various biological resources. In addition, impacts on agricultural lands are fully described in the EIR/EIS, Section 3.14, Agricultural Lands.

Impacts during the construction period of the HST alternatives are considered to be temporary; construction period impacts, such as the use of staging areas, would cease once construction is completed. Subsequent mitigation would restore the land to an appropriate previous state. Project impacts, such as removal of special-status plant communities and other land cover types necessary for the HST right-of-way and associated facilities, are considered to be permanent.

This section evaluates direct and indirect impacts that would result from both construction and project activities of each HST alternative on biological resources. Biological resources are described below in four categories: (1) special-status plant species, (2) special-status wildlife species, (3) habitats of concern, and (4) wildlife movement corridors.

Construction is anticipated to be completed within 7 years, including purchasing rights-of-way and testing the HSTs. Typically, heavy construction timelines (e.g., grading, excavating, constructing the HST rail bed, and laying the trackway) would be accomplished within a 3- to 4-year period.

Construction Period Impacts – Common Biological Resource Impacts

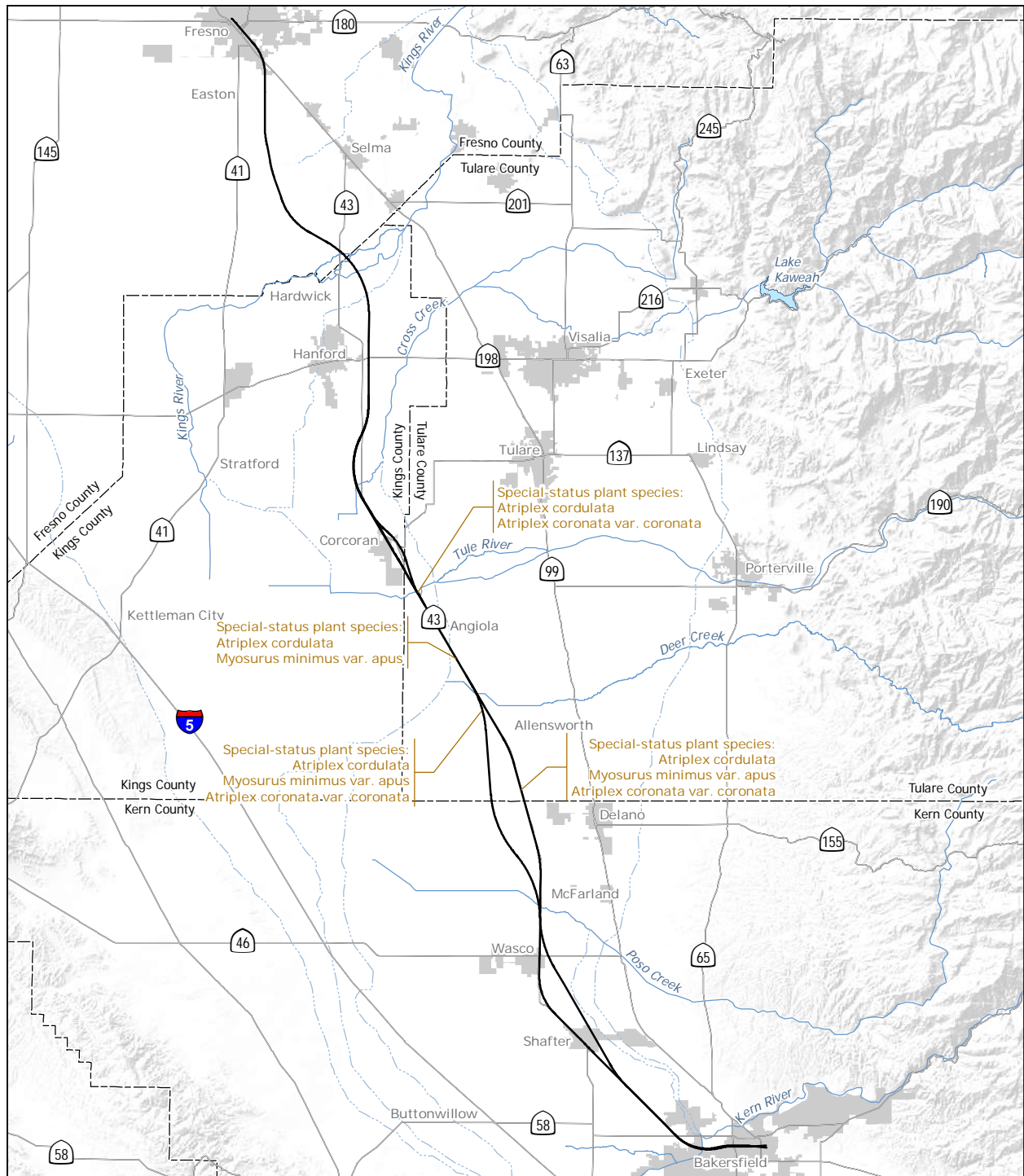
Biological resources occurring adjacent to the disturbance limits of the construction footprint are expected to incur direct and indirect impacts from construction activities. These direct and indirect impacts would be common across all HST alternatives.

The following sections discuss the HST alternatives effects on biological resources (i.e., special-status plant species, special-status wildlife species, habitats of concern, and wildlife movement corridors). All impacts associated with the HMF alternatives and station alternatives are considered permanent. Permanent direct and indirect impacts to biological resources associated with the HMF and station alternatives are discussed in the project impact section.

Special-Status Plant Species

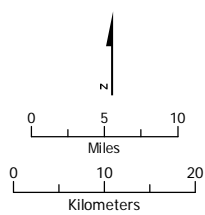
Special-status plant species have the potential to occur across all HST alternatives. Appendix 3.7-A, Attachment 1, lists these species and discusses their potential for occurrence within each HST alternative. Where access was granted, focused special-status plant surveys were conducted. Where access was not granted, the determination of effects on special-status plants reflect a conservative approach: if suitable habitat was determined to be present, the special-status plant species associated with that habitat were also assumed to be present.

Based on the field surveys, two special-status plant species are known to occur within the construction footprint and would be adversely affected by construction activities: heartscale (*Atriplex cordulata*) and little mouse tail (*Myosurus minimus* ssp. *apus*) (see Figure 3.7-3).



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED
Data source: URS, 2011

June 26, 2011



- Alternative alignment
- Stream/River
- - - Canal/Aqueduct
- Highway
- Community/Urban area
- - - County boundary

Figure 3.7-3
Special-Status Species (plant) observed within
Special-Status Plant Study Area

In addition to the species that have been observed within the Special-Status Plant Study Area, special-status plant species have the potential to occur in areas of suitable habitat in parcels that have not been surveyed. These species include federally and/or state-listed species and species listed by the CNPS, all of which are considered rare in California. If these species do occur in the construction footprint, they would be subject to the same adverse effects as those described below for species known to occur.

Direct Impacts during Construction Period Impacts

Direct impacts on special-status plant species may occur as a result of construction crews removing vegetation within and adjacent to the construction footprint, and from construction vehicles and personnel disturbing vegetation (i.e., trampling, covering, and crushing individual plants, populations, or suitable potential habitat for special-status plant species).

Indirect Impacts during Construction Period Impacts

Indirect impacts on special-status plant species would potentially include erosion, siltation, and runoff into natural and constructed watercourses; soil and water contamination from construction equipment leaks; construction-related dust affecting plants by reducing their photosynthetic capability (especially during flowering periods); and an increased risk of fire (e.g., construction equipment use and smoking by construction workers) in adjacent open spaces.

BNSF Alternative Alignment

Two species of special-status plant species, heartscale and little mouse tail, have been identified within the BNSF Alternative. None of these known occurrences are located within areas of construction period (i.e., temporary) impacts. However, special-status plant species could occur in unsurveyed potentially suitable habitats within the BNSF Alternative (Appendix 3.7-B, Attachment 1). The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant species. Due to these direct and indirect impacts, construction of the BNSF Alternative would result in a moderate effect under NEPA on special-status plant species and their habitats during construction. The impact would be significant under CEQA. These determinations are due to the temporary direct and indirect impacts on these species.

Corcoran Elevated Alternative Alignment

No special-status plant species were identified in the Corcoran Elevated Alternative, but habitats that have the potential to support special-status plant species are present (Appendix 3.7-A, Attachment 3). These habitats are mainly in urban and agricultural lands (Table 3.7-6 and Table 3.7-7) which have no to low potential of supporting special-status plant species (Appendix 3.7-A, Attachment 1). Neither the Corcoran Elevated Alternative nor the corresponding segment of the BNSF Alternative would result in temporary impacts on special-status plant species; however, the Corcoran Bypass Alternative would result in slightly larger temporary impacts on habitats that have a low potential to support special-status plant species than its corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 1). If special-status plant species are present in these habitats, construction period impacts under the Corcoran Elevated Alternative could directly and indirectly result in temporary impacts on these species. The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant species.

Table 3.7-6

Terrestrial Communities Potentially Affected by the Alternative Alignments (acres): Construction Period Impacts (Temporary Impacts)

	Developed Areas		Agricultural Lands	Annual Grassland	Valley Foothill Riparian	Alkali Desert Scrub	Pasture
	Barren	Urban					
Alternative Alignments	Impact Acreage / Difference Compared to Corresponding BNSF Area ^a						
BNSF	250.26	471.27	1217.11	20.06	0.27	1.67	0.42
Corcoran Elevated	0.26 / +0.26	12.16 / +9.26	— / -0.45	0.71 / +0.71	—		—
Corcoran Bypass	—	245.28 / -2.86	173.27 / +5.66	0.28 / +0.28	0.09 / +0.09	—	—
Allensworth Bypass	—	0.58 / -11.40	145.47 / +2.26	4.65 / +2.82	0.14 / -0.11	—	—
Wasco-Shafter Bypass	—	51.95 / -51.07	449.3 / +0.47	1.75 / +0.02	—	—	—
Bakersfield South	163.87 / -0.43	41.71 / +0.71	0.03 / —	11.43 / -0.00	0.25 / +0.25	0.88 / -0.79	—

Notes:

— = No impact or not applicable

All impacts were calculated based on 15% engineering design construction footprint.

Note: Please reference Appendix 3.7-B, Attachments 1, 2, and 3 for more detailed comparisons.

^a The "Difference Compared to Corresponding BNSF Area" represents the difference in impact acreages between an alternative alignment and its corresponding segment in the BNSF Alternative: positive (+) differences indicate that the alternative alignment results in greater impact acres than its corresponding segment in the BNSF Alternative; negative (-) differences indicate that the alternative alignment results in fewer impact acres than its corresponding segment in the BNSF Alternative.

Table 3.7-7

Aquatic Communities Potentially Affected by the Alternative Alignments (acres): Construction Period Impacts (Temporary Impacts)

Alternative Alignments	Seasonal Wetlands and Vernal Pools	Fresh Emergent Wetland	Riverine	Lacustrine ^a
	Impact Acreage/ Difference Compared to Corresponding BNSF Area ^b			
BNSF	0.44	—	4.51	2.93
Corcoran Elevated	—	—	0.04 / +0.04	—
Corcoran Bypass	0.31 / +0.31	—	4.07 / +0.75	0.02 / +0.02
Allensworth Bypass	—/ -0.17	—	0.06 / -0.02	2.32 / +2.04

Table 3.7-7

Aquatic Communities Potentially Affected by the Alternative Alignments (acres): Construction Period Impacts (Temporary Impacts)

Alternative Alignments	Seasonal Wetlands and Vernal Pools	Fresh Emergent Wetland	Riverine	Lacustrine ^a
	Impact Acreage/ Difference Compared to Corresponding BNSF Area ^b			
Wasco-Shafter Bypass	—	—	0.27 / +0.03	0.66 / -0.32
Bakersfield South	—	—	0.56 / +0.41	1.77 / +0.10
<p>Notes:</p> <p>— = No impact or not applicable</p> <p>All impacts were calculated based on 15% engineering design construction footprint.</p> <p>Note: Please reference Appendix 3.7-B, Attachment 4 for more detailed comparisons.</p> <p>^a Lacustrine areas are limited to man-made basins; the Habitat Study Area has no natural permanent lakes.</p> <p>^b The "Difference Compared to Corresponding BNSF Area" represents the difference in impact acreages between an alternative alignment and its corresponding segment in the BNSF Alternative: positive (+) differences indicate that the alternative alignment results in greater impact acres than its corresponding segment in the BNSF Alternative; negative (-) differences indicate that the alternative alignment results in fewer impact acres than its corresponding segment in the BNSF Alternative.</p>				

Construction period impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status plant species. However, construction period impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant species. These determinations are due to the potential temporary direct and indirect impacts on these species and their habitats.

Corcoran Bypass Alternative Alignment

No special-status plant species were identified in the Corcoran Bypass Alternative, although habitats that have the potential to support special-status plant species are present (Appendix 3.7-A, Attachment 3). If special-status plant species are present in their suitable habitats, construction period impacts under the Corcoran Bypass Alternative could directly and indirectly result in temporary impacts on these species. The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant species.

Neither construction activities in the Corcoran Bypass Alternative nor within the corresponding segment of the BNSF Alternative would result in temporary impacts on special-status plant species; however, the Corcoran Bypass Alternative would result in larger temporary impacts on habitats that have the potential to support special-status plant species than its corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 1). Construction period impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant species and their habitats because of the temporary direct and indirect impacts on these species and their habitats.

Allensworth Bypass Alternative Alignment

No special-status plant species were identified in the Allensworth Bypass Alternative, although habitats that have the potential to support special-status plant species do occur (Appendix 3.7-A, Attachment 1). If special-status plant species are present in their suitable habitats, construction period impacts under the Allensworth Bypass Alternative could directly and indirectly result in temporary impacts on these species. The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant species.

The Allensworth Bypass Alternative would result in slightly fewer temporary impacts to special-status plant species than its corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 1). The Allensworth Bypass Alternative would result in larger temporary direct impacts on habitats that have the potential to support special-status plant species than the corresponding BNSF Alternative (Appendix 3.7-B, Attachment 1). If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass, this would likely additionally increase the temporary impacts on suitable habitat for special-status plant species when compared to the corresponding segment of the BNSF Alternative. Construction period impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant species and their habitats because of the temporary direct and indirect impacts on these species and their habitats.

Wasco-Shafter Bypass Alternative Alignment

No special-status plant species were identified in the Wasco-Shafter Bypass Alternative, although habitats that have the potential to support special-status plant species do occur (Appendix 3.7-A, Attachment 3). Suitable habitat for most special-status plant species is limited in the Wasco-Shafter Bypass Alternative (and in the corresponding segment of the BNSF Alternative) by a number of factors, including the conversion of natural lands to agricultural land uses. While suitable habitat is limited, special-status plant species have up to a moderate potential of being present in suitable habitats (Appendix 3.7-A, Attachment 1). If special-status plant species are present in their suitable habitats, construction period impacts under the Wasco-Shafter Bypass Alternative could directly and indirectly result in temporary impacts on these species. The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant species.

The Wasco-Shafter Bypass Alternative would result in slightly larger temporary impacts on habitats that have the potential to support special-status plant species than the corresponding BNSF Alternative (Appendix 3.7-B, Attachment 1). Because the habitats in both alternatives are disturbed, fragmented, and of low quality, the potential for special-status plant species to occur is low. Construction period impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant species and their habitats because of the temporary direct and indirect impacts on these species and their habitats.

Bakersfield South Alternative Alignment

No known occurrences of special-status plants exist in the Bakersfield South Alternative. Suitable habitat for most special-status plant species is limited in the Bakersfield South Alternative (and in its corresponding segment of the BNSF Alternative) by a number of factors, including fragmentation and disturbance due to development (urbanization) that encompasses residential, commercial, and industrial purposes. Both the Bakersfield South Alternative and the corresponding BNSF Alternative segment are located in a highly urbanized portion of

metropolitan Bakersfield. Both alternatives would affect small areas of habitat that could support special-status plants. While suitable habitat is limited, special-status plant species have up to a moderate potential of being present in suitable habitats (Appendix 3.7-A, Attachment 1). If special-status plant species are present in their suitable habitats, construction period impacts under the Bakersfield South Alternative would directly and indirectly result in temporary impacts on special-status plant species (Appendix 3.7-B, Attachment 1). The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant species.

The Bakersfield South Alternative would result in slightly larger temporary direct impacts on habitats that have the potential to support special-status plant species than would its corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 1). Construction period impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant species and their habitats because of the temporary direct and indirect impacts on these species and their habitats.

Special-Status Wildlife Species

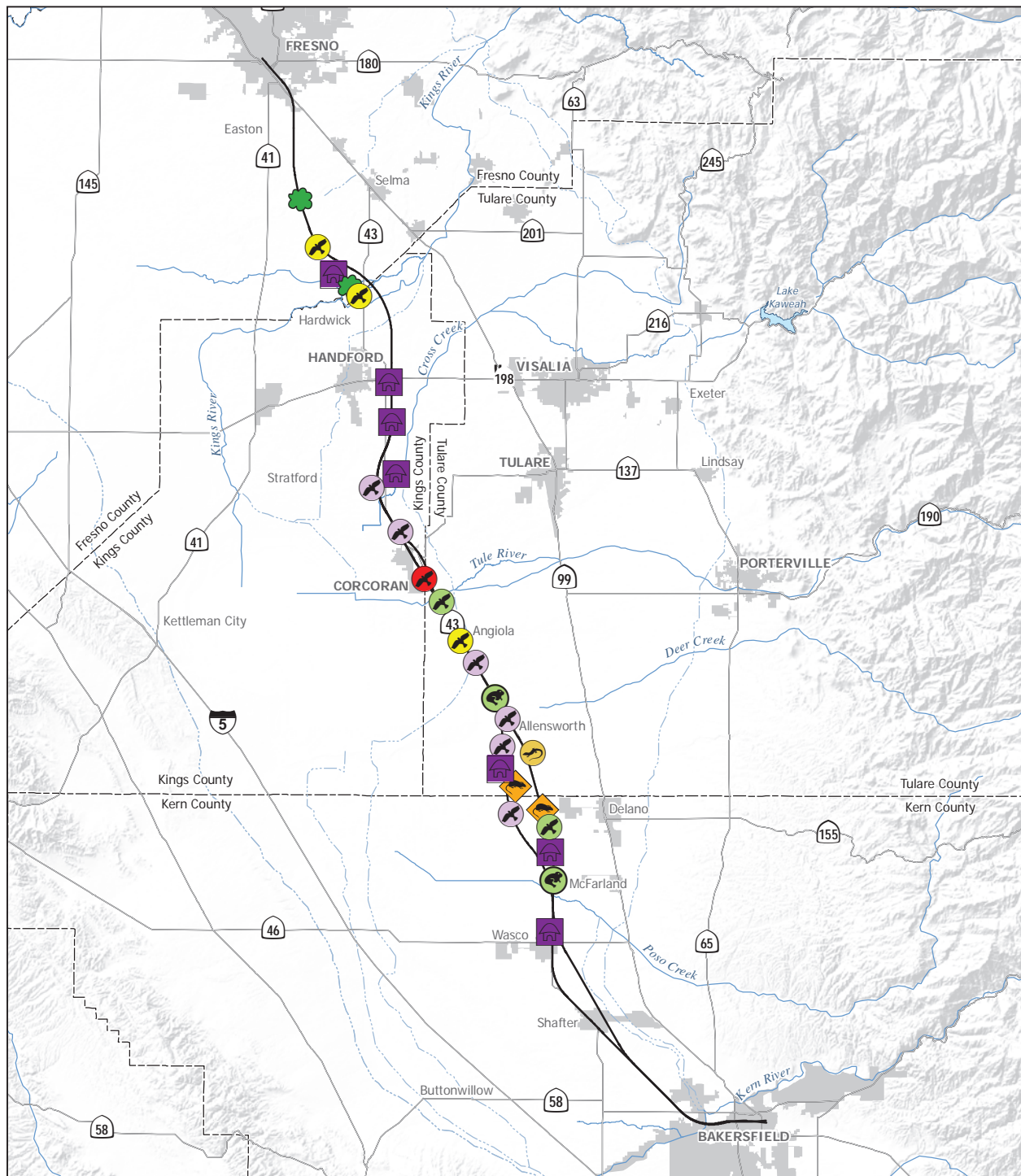
Wildlife habitat and land cover types in the construction footprint have the potential to support a variety of special-status wildlife species. Construction activities have the potential to disturb the life cycles of these special-status species. The following section discusses impacts, direct and indirect, to special-status wildlife species resulting from construction.

Fifty-three special-status wildlife species were determined to have the potential to occur across all HST alternatives. Appendix 3.7-A, Attachment 2 lists these species and discusses their potential for occurrence within the HST alternatives. The presence of and potential for special-status wildlife species to occur in a particular habitat is linked to the physical characteristics of the landscape. For instance, amphibians require standing water to complete their life cycle. However, terrestrial species may be linked to aquatic resources for a limited time during their breeding season and may spend significant amounts of time away from aquatic resources. No protocol surveys for special-status wildlife species were conducted. Determinations made on the effects on special-status wildlife species assume that if suitable habitat was present, then the associated special-status wildlife species is also present. Observations of special-status wildlife species from 2010 field surveys are shown on Figures 3.7-4.

Direct Impacts during Construction Period Impacts

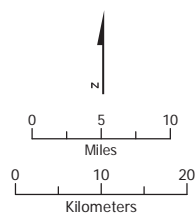
Invertebrates: Vernal pool branchiopods (vernal pool tadpole shrimp and vernal pool fairy shrimp) or their cysts could be directly affected if any construction activity occurs within seasonal wetlands, including vernal pool, when wet or dry. Other direct impacts during construction on vernal pool branchiopods would include changes in the retention/ infiltration of runoff, disturbance of the hardpan, and potential increase in siltation and turbidity from grading, vehicle traffic, contaminants, and other related ground-disturbing activities. Construction period impacts can alter the watershed of specific vernal pools, which, in turn, would alter seasonal inundation conditions.

Valley elderberry longhorn beetles can be directly affected through the damage or removal of elderberry host plants. Removal of young elderberry shrubs would reduce the long-term habitat of the valley elderberry longhorn beetle by inhibiting recruitment of young elderberry shrubs into the canopy.



PRELIMINARY DRAFT/SUBJECT TO CHANGE - HST ALIGNMENT IS NOT DETERMINED
Data source: URS, 2011

June 22, 2011



Special-status wildlife species

- Elderberry bush
- Artificial nest box
- Burrowing owl
- Coast horned lizard
- Great horned owl nest

- Red-tailed hawk nest
- Spadefoot toad/tadpole
- Swainson's hawk nest
- Unknown kangaroo rat (sign)

- Alternative alignment
- Stream/River
- Canal/Aqueduct
- County boundary
- Community/Urban area

Figure 3.7-4
Special-status species (wildlife)
observed within Habitat Study Area

Amphibians: Direct impacts on amphibian species (including California tiger salamander and western spadefoot toad) include construction activities in suitable upland or aquatic habitat that could cause mortality, injury, or harassment of adults, eggs or egg masses, and larvae. Construction may also result in the temporary destruction, degradation, fill, or pollution of aquatic breeding or upland nesting habitats and the temporary loss of burrows or other upland refugia. Mortality, injury, or harassment may also occur if these species become trapped in open, excavated areas. Other direct impacts on aquatic habitat that change seasonal inundation patterns would be similar as for vernal pool branchiopods.

Reptiles: Direct impacts on reptiles (including western pond turtle, blunt-nosed leopard lizard, silvery legless lizard, San Joaquin whipsnake, and coast horned lizard) include construction activities in suitable habitat that could cause mortality, injury, or harassment of adults, eggs, or juveniles. Construction may also result in the temporary destruction, degradation, or pollution of habitat and the temporary loss of nesting areas, burrows, or other refugia. Mortality, injury, or harassment may also occur if these species become trapped in open, excavated areas.

Fish: Direct impacts on special-status fish (i.e., Kern brook lamprey) consist of physical disturbance, interruptions to fish passage, sedimentation, turbidity, altered water temperatures, oxygen depletion, and contaminants. Final bridge design plans are not currently available, but construction may require work below the ordinary high water mark. Dewatering during construction, if needed, may result in the stranding and mortality of special-status fish.

Birds (includes all migratory birds covered under MBTA): Thirty-nine special-status bird species have the potential to occur in the construction footprint (Appendix 3.7-A, Attachment 2). Burrowing owls and other raptors extensively use agricultural lands, annual grasslands, valley foothill riparian (except burrowing owl), alkali desert scrub, irrigated hay field, and pasture land cover types.

Construction activities (e.g., grubbing, grading, excavation, and driving off-road) could remove or disturb potential nesting habitat for special-status passerine birds; special-status wading birds; shorebirds; duck species; and migratory birds. If construction occurs during the breeding season (February 1 to September 1), active nests could also be disturbed and could cause the loss of eggs or of developing young. While construction activities would not substantially reduce habitat available for these species, restrict their range, or cause their regional populations to drop below self-sustaining levels, the direct or indirect loss of nests through physical removal, nest abandonment, or reproductive suppression of these regionally rare species would violate the MBTA and would constitute a moderate effect.

- **Burrowing Owls:** Burrowing owls extensively use open landscapes with suitable artificial or natural burrows. Suitable habitat exists along the majority of the construction footprint. Vibration from construction equipment along with increased vehicular traffic could collapse inhabited burrows. Rodent control programs can directly poison owls as well as reduce the long-term availability of burrows.
- **Raptors:** Raptors may nest in riparian habitat, in roadside trees, in windbreaks, in oak woodlands, and on man-made towers. Several species were identified in the survey area, including Swainson's hawks. Construction disturbance within the February 1 to September 1 breeding season could result in the loss of fertile eggs or nestlings through nest abandonment. Direct impacts on raptors also include the loss of breeding and foraging habitat, as well as a decline in prey as a result of rodent control programs.

Mammals: Construction activities described above also have the potential to affect special-status mammals, including San Joaquin kit fox, special-status bats, American badger, and other special-status mammal species.

- Western mastiff bat, western red bat, Townsend's big-eared bat, and pallid bat: Increased lighting after sunset would disrupt foraging activities by special-status bat species, causing them to leave an area that has prolonged disturbance. Nocturnal insects are drawn by lighting, which in turn attracts foraging bats. Special-status bats that are attracted to lighted construction areas would have higher potential mortality through disorientation and impacts with construction equipment. Direct impacts on bats would include mortality of individuals during construction and temporary disturbances from noise, dust, and ultrasonic vibrations from construction equipment.
- San Joaquin kit fox: Impacts on San Joaquin kit foxes would occur since this species has the potential to actively use the construction footprint and adjacent areas. Mortality of San Joaquin kit fox could occur from crushing burrows by construction equipment as well as from vehicle strikes in work areas. Temporary impacts on unhabituated San Joaquin kit fox would occur from noise, dust, and motion disturbance.
- American badger: Mortality of American badgers would occur from burrows being crushed by construction equipment as well as from vehicle strikes in construction work areas. Temporary impacts on American badgers would occur from noise, dust, and motion disturbance.
- Other special-status mammal species: Direct impacts on other special-status mammal species (including Nelson's [San Joaquin] antelope squirrel, Fresno kangaroo rat, Tipton kangaroo rat, Dulzura pocket mouse, and Tulare grasshopper mouse) during construction would be the same as for the San Joaquin kit fox and American badger.

Indirect Impacts during Construction Period Impacts

Invertebrates: Indirect impacts would result from the upslope disturbance and stockpiling of soils contributing to the transportation of sediment loads to adjacent habitats suitable for vernal pool branchiopods. Changes in the contour of the landscape or the disturbance of hardpan soils would cause changes in the hydrological cycles of seasonal wetlands, including vernal pools. Chemical spills from construction equipment (e.g., fuel, transmission fluid, lubricating oil, and motor oil) could contaminate the water column, resulting in habitat degradation or reduced reproductive success of vernal pool branchiopods. Indirect impacts on vernal pool branchiopods may also include the shading of habitats by structures and the inadvertent introduction of non-native invasive (noxious) weeds such as yellow star thistle (*Centaureum solstitialis*).

For valley elderberry longhorn beetle, indirect impacts during construction could include the accumulation of fugitive dust on elderberry host plants, potentially weakening their vigor. In addition, changes to local runoff could have negative effects on the health and vigor of these plants.

Amphibians: Indirect construction period impacts for amphibians are similar to those for vernal pool branchiopods described above.

Reptiles: Indirect impacts on reptiles may include the inadvertent introduction of invasive (noxious) weeds, such as yellow star thistle, which can reduce habitat suitability. Soil compaction and the placement of fill in suitable habitat may indirectly affect special-status reptiles by prohibiting burrowing, or by changing the frequency of vegetative cover. Construction activities may attract opportunistic predators (e.g., ravens, feral cats, raccoons) that may feed on special-status reptiles.

Fish: Indirect impacts on special-status fish include changes in water quality. Ground disturbance associated with construction may increase erosion and sedimentation into nearby creeks, rivers, and other waters. Chemical spills from construction equipment (e.g., fuel, transmission fluid,

lubricating oil, and motor oil) could contaminate the water column, resulting in habitat degradation or reduced reproductive success of special-status fish in downstream habitats.

Birds (includes all migratory birds covered under MBTA): Indirect impacts would occur when breeding birds temporarily or permanently leave their nesting territories to avoid disturbance (e.g., noise, visual) from construction activities. Repeated exposure to disturbance can reduce reproductive success and increase mortality through the exposure of nests to predators and the elements. Indirect impacts could result from repeated disturbance of breeding birds by construction vehicles traveling in work areas.

- Burrowing Owls: Indirect impacts would occur from the loss of habitat due to non-native plant species, such as yellow star thistle, colonizing the area and from the disruption of breeding activity by repeated disturbance from construction vehicles traveling in work areas.
- Raptors: Indirect impacts during construction on raptors would be the same as for all avian species.

Mammals: Construction activities have the potential to indirectly affect special-status mammals, including San Joaquin kit fox, special-status bats, American badger, and other special-status mammal species.

- Western mastiff bat, western red bat and pallid bat: Ground-disturbing activities, such as excavation, vegetation removal, construction of the rail bed, placement of temporary structures and staging areas, and equipment operation, could result in noise, dust, or vibration disturbance. These activities could indirectly disrupt breeding or roosting activity, or result in the temporary loss of foraging habitats.
- San Joaquin kit fox: Indirect impacts would potentially include alteration of soils, such as compaction. Removal of fossorial prey species such as kangaroo rats would impact food availability for this species. The inadvertent introduction of invasive (noxious) weeds, such as yellow star thistle, could reduce habitat suitability for this species.
- American badger: Indirect impacts would be the same as for the San Joaquin kit fox.
- Other special-status mammal species: Indirect impacts on other special-status mammal species (including Nelson's [San Joaquin] antelope squirrel, Fresno kangaroo rat, Tipton kangaroo rat, Dulzura pocket mouse, and Tulare grasshopper mouse) during construction would potentially include alteration of soils as a result of compaction. Compaction and the placement of fill may also alter vegetative cover, reducing habitat suitability. The inadvertent introduction of invasive (noxious) weeds, such as yellow star thistle, could reduce habitat value for these species.

BNSF Alternative Alignment

Construction of the BNSF Alternative would result in direct and indirect impacts on a number of special-status wildlife species and on their habitat. These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The amount of temporary impacts associated with construction period impacts is provided in Appendix 3.7-B, Attachment 2. The potential for the various special-status wildlife species to occur throughout the BNSF Alternative varies according to the species' known geographic range and the presence of suitable habitat capable of supporting the species' life history (Appendix 3.7-A, Attachment 2). Tables 3.7-6 and 3.7-7 list the amount of terrestrial and aquatic habitat (in acres) that would potentially be temporarily affected by the HST alternative alignments.

Invertebrates: Suitable habitat for special-status invertebrate species occurs at various locations within the BNSF Alternative. Seasonal wetlands and vernal pools may provide suitable habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp. Elderberry shrubs were identified within the BNSF Alternative and may occur in unsurveyed areas in Fresno and Kings counties, primarily along the Kings River, Cole Slough, and Dutch John Slough. Elderberry shrubs may provide suitable habitat for the valley elderberry longhorn beetle, which exclusively uses this shrub as its host plant. Due to the presence of suitable habitat, construction of the BNSF Alternative would result in a moderate effect on special-status invertebrate species and their habitat under NEPA and a significant impact under CEQA. These determinations are due to the temporary direct and indirect impacts on these species.

Fish: A single special-status fish species (i.e., Kern brook lamprey) may be present in a single location within the BNSF Alternative, the Friant-Kern Canal in Bakersfield. A small amount of marginal habitat (i.e., riverine) for the Kern brook lamprey is present in the Friant-Kern Canal. At this location the BNSF Alternative would be constructed on an elevated structure. Construction of the elevated structure could result in direct and indirect impacts to Kern brook lamprey in a limited area. Kern brook lamprey has a low potential to be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). While other streams within the BNSF Alternative may provide suitable habitat for Kern brook lamprey, these streams are inaccessible either because of extensive water diversions and in-stream obstructions to migratory movement or because they are outside the range of this species. The impacts of construction under the BNSF Alternative would result in a negligible effect on special-status fish species and their habitat under NEPA and in a less-than-significant impact under CEQA. These determinations are due to the potential temporary direct and indirect impacts on this species.

Amphibians: Suitable habitat for western spadefoot toad is present within the BNSF Alternative. Potential suitable breeding habitat consists of wetlands and riverine and adjacent upland habitat (e.g., annual grassland and alkali desert scrub). Impacts on this species may occur throughout the BNSF Alternative where suitable aquatic habitat is present. No impacts are anticipated to occur on California tiger salamander as a result of the BNSF Alternative. Suitable aquatic habitat for this species (e.g., seasonal wetlands and vernal pools) occurs outside the construction footprint (i.e., Corcoran Irrigation Water District). The BNSF Alternative does not overlap suitable California tiger salamander upland habitat (i.e., annual grassland, pasture, and alkali desert scrub habitats within 1.24 miles of the Corcoran Irrigation Water District). Construction period impacts under the BNSF Alternative would result in a moderate effect on special-status amphibian species and their habitats under NEPA and in a significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts on these species.

Reptiles: Suitable habitat for special-status reptiles is present at various locations within the BNSF Alternative. Aquatic habitats—riverine and lacustrine habitats as well as natural upland areas, such as alkali desert scrub and annual grassland—are present. These habitats may support a range of special-status reptiles, including the western pond turtle, blunt-nosed leopard lizard, silvery legless lizard, San Joaquin whipsnake, and coast horned lizard. The impacts of construction under the BNSF Alternative would result in a moderate effect on special-status reptile species and their habitat under NEPA and in a significant impact under CEQA. These determinations are due to the temporary direct and indirect impacts on these species.

Birds (including all migratory birds covered under MBTA): There are a number of habitats known to support special-status birds and raptors within the BNSF Alternative. Aquatic habitats (e.g., riverine, lacustrine), annual grassland, and agricultural lands all may provide suitable habitat for a variety of birds and raptors. The impacts of construction under the BNSF Alternative would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status bird and raptor species and their habitat. These determinations are due to the temporary direct and indirect impacts on these species.

Mammals: There is suitable habitat for special-status mammals at various locations within the BNSF Alternative. Natural habitats, such as alkali desert scrub and annual grassland, may support special-status mammals (e.g., American badger, San Joaquin kit fox, and Tipton kangaroo rat). Trees and rocky outcrops in natural habitats as well as trees and buildings in rural and urban areas may support special-status bats. The impacts of construction under the BNSF Alternative would result in a moderate effect on special-status mammal species and their habitat under NEPA and in a significant impact under CEQA. These determinations are due to the temporary direct and indirect impacts on these species.

Corcoran Elevated Alternative Alignment

Construction-related activities associated with the Corcoran Elevated Alternative would result in direct and indirect project impacts on a number of special-status wildlife species and their habitat. These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The amount of temporary impacts associated with construction period impacts is provided in Appendix 3.7-B, Attachment 2. The potential for the various special-status wildlife species to occur throughout the Corcoran Elevated Alternative varies according to the species' known geographic range, and the presence of suitable habitat capable of supporting the species' life history (Appendix 3.7-A, Attachment 2). Tables 3.7-6 and 3.7-7 list the amount of terrestrial and aquatic habitat (in acres) that would potentially be temporarily affected by the HST alternative alignments.

Both the Corcoran Elevated Alternative and the corresponding BNSF Alternative segment are located in the urban areas of Corcoran. Both alternatives would affect small areas of habitat that could support special-status wildlife species; however, these habitats are mainly urban and agricultural lands (Table 3.7-6 and Table 3.7-7) which have a low to moderate potential of supporting these species (Appendix 3.7-A, Attachment 2). The magnitude of these impacts is similar between the Corcoran Elevated Alternative and the corresponding BNSF Alternative segment. However, indirect impacts on these species are substantially less in the Corcoran Elevated Alternative, compared with those of the corresponding BNSF Alternative segment, because the elevated structure will maintain habitat porosity across the alignment.

Invertebrates: The Corcoran Elevated Alternative does not contain suitable habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp. Elderberry shrubs, the sole host plant of the valley elderberry longhorn beetle, have not been identified in the Corcoran Elevated Alternative. This species could be temporarily affected if project activities occur in unsurveyed natural areas that contain elderberry shrubs. However, few natural areas are located in the Corcoran Elevated Alternative (Table 3.7-6; Table 3.7-7). This species has a low potential to occur in this alternative. Construction period impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status invertebrate species. However, construction period impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status invertebrate species. These determinations are due to the potential temporary direct and indirect impacts on these species and their habitats.

Fish: Special-status fish species are not expected to occur within the Corcoran Elevated Alternative, as streams within this alternative are inaccessible either because of extensive water diversions and in-stream obstructions to migratory movement, or because they are outside the range of special-status fish species. Therefore, no direct or indirect impacts on special-status fish would result from construction of this alternative. Construction period impacts under the Corcoran Elevated Alternative would result in no effect under NEPA and no impact under CEQA on special-status fish species. However, construction period impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result

in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status fish species. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on special-status fish species and their habitats.

Amphibians: The Corcoran Elevated Alternative occurs mainly in urban and agricultural lands and includes only a minor amount of upland and aquatic habitat (Table 3.7-8 and Table 3.7-9) potentially suitable for western spadefoot toad. Portions of the Corcoran Elevated Alternative in agricultural and urban land uses likely provide little value for western spadefoot toad. Western spadefoot toad has a low potential of being temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). There are no habitats potentially supporting California tiger salamander within the Corcoran Elevated Alternative. Construction period impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status amphibian species. However, construction period impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status amphibian species. These determinations are due to the potential temporary direct and indirect impacts on these species and their habitats.

Table 3.7-8
Terrestrial Communities Potentially Affected by the Alternative Alignments (acres): Project Impacts (Permanent Impacts)

Alternative Alignments	Developed Areas		Agricultural Lands	Annual Grassland	Valley Foothill Riparian	Alkali Desert Scrub	Pasture
	Barren	Urban					
	Impact Acreage / Difference Compared to Corresponding BNSF Area ^a						
BNSF	41.82	1033.60	1548.14	113.93	4.52	27.14	25.39
Corcoran Elevated	7.74 / +1.63	29.14 / -35.05	8.96 / -11.82	1.72 / -8.41	—	—	—
Corcoran Bypass	3.25 / -7.89	126.57 / -46.85	357.83 / -25.16	37.95 / +18.09	0.53 / +0.03	—	< 0.01 / —
Allensworth Bypass	—	29.20 / -48.87	251.02 / +99.96	53.69 / +5.58	0.91 / +0.40	5.61 / -17.38	— / -1.91
Wasco-Shafter Bypass	— / -10.93	121.37 / -97.07	347.67 / +117.23	12.63 / -0.10	—	—	—
Bakersfield South	5.23 / +0.43	131.61 / -72.74	0.83 / —	0.22 / -1.16	0.31 / +0.13	8.36 / +4.20	0.50 / -0.37

Notes:

— = No impact or not applicable.

All impacts were calculated based on 15% engineering design construction footprint.

Note: Please reference Appendix 3.7-B, Attachments 1, 2, and 3 for more detailed comparisons.

^a The "Difference Compared to Corresponding BNSF Area" represents the difference in impact acreages between an alternative alignment and its corresponding segment in the BNSF Alternative: positive (+) differences indicate that the alternative alignment results in greater impact acres than its corresponding segment in the BNSF Alternative; negative (-) differences indicate that the alternative alignment results in fewer impact acres than its corresponding segment in the BNSF Alternative. Impact calculations in this table include alternative alignments, but do not include station alternatives or HMF alternatives.

Table 3.7-9
Aquatic Communities Potentially Affected by the Alternative Alignments (acres): Project Impacts
(Permanent Impacts)

Alternative Alignments	Seasonal Wetlands and Vernal Pools	Fresh Emergent Wetland	Riverine	Lacustrine ^a
	Impact Acreage / Difference Compared to Corresponding BNSF Area ^b			
BNSF	10.97	—	31.97	13.65
Corcoran Elevated	—	—	2.15 / -1.35	0.00 / -0.42
Corcoran Bypass	1.23 / -0.24	—	9.12 / -8.04	0.04 / -0.80
Allensworth Bypass	2.28 / -6.96	—	3.82 / +0.15	12.82 / +3.44
Wasco-Shafter Bypass	—	—	1.64 / -0.83	1.37 / +0.21
Bakersfield South	— / -0.13	—	2.64 / -0.17	0.91 / -0.28
<p>Notes:</p> <p>— = No impact or not applicable.</p> <p>All impacts were calculated based on 15% engineering design construction footprint.</p> <p>Note: Please reference Appendix 3.7-B, Attachment 4 for more detailed comparisons.</p> <p>^a Lacustrine areas are limited to man-made basins; the Habitat Study Area has no natural permanent lakes.</p> <p>^b The "Difference Compared to Corresponding BNSF Area" represents the difference in impact acreages between an alternative alignment and its corresponding segment in the BNSF Alternative; positive (+) differences indicate that the alternative alignment results in greater impact acres than its corresponding segment in the BNSF Alternative; negative (-) differences indicate that the alternative alignment results in fewer impact acres than its corresponding segment in the BNSF Alternative.</p> <p>Impact calculations in this table include alternative alignments, but do not include station alternatives or HMF alternatives.</p>				

Reptiles: The Corcoran Elevated Alternative occurs mainly in urban and agricultural lands and includes only a minor amount of upland and aquatic habitat (Table 3.7-8 and Table 3.7-9) potentially suitable for special-status reptile species (e.g., coast horned lizard and western pond turtle) (Appendix 3.7-A, Attachment 2). Portions of the Corcoran Elevated Alternative in agricultural and urban land uses likely provide little value for special-status reptile species. Special-status reptiles have a low potential of being permanently affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status reptile species. However, construction period impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status reptile species. These determinations are due to the potential temporary direct and indirect impacts on these species and their habitats.

Birds (includes all migratory birds covered under MBTA): The Corcoran Elevated Alternative contains suitable habitat (including both natural habitats and agricultural land uses) for a variety of special-status birds (Appendix 3.7-A, Attachment 2). Special-status birds would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Corcoran Elevated Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status bird species because of the temporary direct and indirect impacts on these species and their habitats.

Mammals: The Corcoran Elevated Alternative contains both natural lands (e.g., annual grassland) and agricultural lands that provide suitable habitat for special-status mammal species (e.g., Tipton kangaroo rat and the San Joaquin kit fox). The agricultural land uses likely provide little value for breeding or foraging special-status mammal species. However, these areas may be suitable for dispersal and foraging activities. Natural lands may provide opportunity for breeding, foraging, dispersal, and migration of the special-status mammal species. Special-status mammals would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Appendix 2). Construction period impacts under the Corcoran Elevated Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status mammal species because of the temporary direct and indirect impacts on these species and their habitats.

Corcoran Bypass Alternative Alignment

Construction of the Corcoran Bypass Alternative would result in direct and indirect impacts on a number of special-status wildlife species and their habitat. These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The amount of temporary impacts associated with construction period impacts is provided in Appendix 3.7-B, Attachment 2. The potential for the various special-status wildlife species to occur throughout the Corcoran Bypass Alternative varies according to the species known geographic range and the presence of suitable habitat capable of supporting the species life history (Appendix 3.7-A, Attachment 2). Tables 3.7-6 and 3.7-7 list the amount of terrestrial and aquatic habitat (in acres) that would potentially be temporarily affected by the HST alignment alternatives.

Both the Corcoran Bypass Alternative and the corresponding BNSF Alternative would occur in the natural lands in the vicinity of Cross Creek and the Tulare Lakebed Mitigation Site. The corresponding BNSF Alternative would occur (in some instances) in annual grasslands adjacent to SR 43 and the BNSF Railway right-of-way and in the urban areas of Corcoran. The Corcoran Bypass Alternative would affect agricultural lands and annual grasslands that provide higher habitat value for special-status species. Additionally, the Corcoran Bypass Alternative would create a new transportation alignment in these habitats, resulting in greater indirect impacts (i.e., habitat fragmentation) than would the BNSF Alternative, which follows existing transportation alignments. The Corcoran Bypass Alternative would result in fewer temporary direct impacts on suitable habitat for special-status wildlife species (Appendix 3.7-B, Attachment 2).

Invertebrates: The Corcoran Bypass Alternative contains suitable habitat (e.g., vernal swale and seasonal wetland) for vernal pool fairy shrimp and vernal pool tadpole shrimp. Special-status invertebrates would be temporarily affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Elderberry shrubs, the sole host plant of the valley elderberry longhorn beetle, have not been identified in the Corcoran Bypass. However, impacts could occur if construction activities occur in unsurveyed natural areas that contain elderberry shrubs. Construction period impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a

moderate effect under NEPA and in a significant impact under CEQA on special-status invertebrate species because of the temporary direct and indirect impacts on these species and their habitats.

Fish: Special-status fish species are not expected to occur within the Corcoran Bypass Alternative, as streams within this alternative are inaccessible either because of extensive water diversions and in-stream obstructions to migratory movement or because they are outside the range of special-status fish species. Therefore, no direct or indirect impacts on special-status fish would result from construction of this alternative. Construction period impacts under the Corcoran Bypass Alternative would result in no effect under NEPA and no impact under CEQA on special-status fish species. However, construction period impacts under the Corcoran Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status fish species. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on special-status fish species and their habitats.

Amphibians: The Corcoran Bypass Alternative includes suitable upland habitat, such as annual grassland, for California tiger salamander and western spadefoot toad. Special-status amphibians would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status amphibian species because of the temporary direct and indirect impacts on these species and their habitats.

Reptiles: The Corcoran Bypass Alternative contains suitable habitat (e.g., riverine and annual grassland) for special-status reptile species (e.g., coast horned lizard and western pond turtle) (Appendix 3.7-A, Attachment 2). Portions of the Corcoran Bypass Alternative in agricultural land uses likely provide little value for special-status reptile species. Special-status reptiles would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status reptile species because of the temporary direct and indirect impacts on these species and their habitats.

Birds (includes all migratory birds covered under MBTA): The Corcoran Bypass Alternative contains suitable habitat (including both natural habitats and agricultural land uses) for a variety of special-status birds (Appendix 3.7-A, Attachment 2). Construction period impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status bird species because of the temporary direct and indirect impacts on these species and their habitats.

Mammals: The Corcoran Bypass Alternative contains both natural lands and agricultural lands that provide suitable habitat (e.g., annual grassland) for special-status mammal species (e.g., Tipton kangaroo rat and the San Joaquin kit fox). The agricultural land uses likely provide little value for breeding or foraging special-status mammal species. However, these areas may be suitable for dispersal and foraging activities. Natural lands may provide opportunity for breeding, foraging, dispersal, and migration of the special-status mammal species. Special-status mammals would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-

status mammal species because of the temporary direct and indirect impacts on these species and their habitats.

Allensworth Bypass Alternative Alignment

Construction of the Allensworth Bypass Alternative would result in direct and indirect impacts on a number of special-status wildlife species and their habitat. These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The amount of temporary impacts associated with construction period impacts is provided in Appendix 3.7-B, Attachment 2. The potential for the various special-status wildlife species to occur throughout the Allensworth Bypass Alternative varies according to the species' known geographic range and the presence of suitable habitat capable of supporting the species' life history (Appendix 3.7-A, Attachment 2). Tables 3.7-6 and 3.7-7 list the amount of terrestrial and aquatic habitat (in acres) that would potentially be temporarily affected by the HST alternative alignments.

In general, the selection of the Allensworth Bypass Alternative would either increase or decrease impacts on special-status wildlife species, depending on the species-specific habitat requirements. If the amount of habitat disturbed in the Allensworth Bypass Alternative is compared with that in the corresponding BNSF Alternative segment, the difference, or delta change, between the alternatives is on the same scale (Appendix 3.7-A, Attachment 2).

If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass Alternative, this would likely additionally increase temporary impacts on special-status wildlife species when compared to the corresponding segment of the BNSF Alternative.

Invertebrates: The Allensworth Bypass Alternative contains suitable habitat (e.g., vernal pools) for vernal pool fairy shrimp and vernal pool tadpole shrimp. No temporary impacts would occur in suitable habitat for vernal pool fairy shrimp or vernal pool tadpole shrimp (Appendix 3.7-B, Attachment 2). Elderberry shrubs, the sole host plant of the valley elderberry longhorn beetle, have not been identified in the Allensworth Bypass Alternative. However, this species could be affected if construction activities occur in unsurveyed natural lands that contain elderberry shrubs. Construction period impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status invertebrate species because of the temporary direct and indirect impacts on these species and their habitats.

Fish: Special-status fish species are not expected to occur within Allensworth Bypass Alternative, as streams within this alternative are inaccessible either because of extensive water diversions and in-stream obstructions to migratory movement, or because they are outside the range of special-status fish species. Therefore, no temporary direct or indirect impacts on special-status fish would result from construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Allensworth Bypass Alternative would result in no effect under NEPA and no impact under CEQA on special-status fish species. However, construction period impacts under the Allensworth Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status fish species. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on special-status fish species and their habitats.

Amphibians: The Allensworth Bypass Alternative contains suitable habitat (e.g., vernal pools, annual grassland, and alkali desert scrub) for western spadefoot toad. Portions of the Allensworth Bypass Alternative in agricultural land uses provide little value or habitat for special-status amphibian species. Special-status amphibians would be temporarily affected, both directly and

indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status amphibian species because of the temporary direct and indirect impacts on these species and their habitats.

Reptiles: The Allensworth Bypass Alternative contains suitable habitat (e.g., annual grassland and alkali desert scrub) for special-status reptiles, including blunt-nosed leopard lizard and coast horned lizard. Portions of the Allensworth Bypass Alternative in agricultural land uses provide little value or habitat for special-status reptile species. Special-status reptiles would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status reptile species because of the temporary direct and indirect impacts on these species and their habitats.

Birds (includes all migratory birds covered under MBTA): The Allensworth Bypass Alternative contains suitable habitat (e.g., annual grassland, alkali desert scrub, and agricultural land uses) for migratory birds and special-status birds, including western burrowing owl and sandhill crane (Appendix 3.7-A, Attachment 2). Special-status birds would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status bird species because of the temporary direct and indirect impacts on these species and their habitats.

Mammals: The Allensworth Bypass Alternative contains suitable habitat (e.g., annual grassland and alkali desert scrub) for special-status mammals, including San Joaquin kit fox, American badger, and Tipton kangaroo rat. The agricultural land uses likely provide little value for breeding or foraging special-status mammal species. However, these areas may be suitable for dispersal and foraging activities. Natural lands may provide opportunity for breeding, foraging, dispersal, and migration of the special-status mammal species. Special-status mammals would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status mammal species because of the temporary direct and indirect impacts on these species and their habitats.

Wasco-Shafter Bypass Alternative Alignment

Construction of the Wasco-Shafter Bypass Alternative would result in direct and indirect impacts on a number of special-status wildlife species and their habitat. These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The amount of temporary impacts associated with construction period impacts is provided in Appendix 3.7-B, Attachment 2. The potential for the various special-status wildlife species to occur throughout the Wasco-Shafter Bypass Alternative varies according to the species' known geographic range, and the presence of suitable habitat capable of supporting the species' life history (Appendix 3.7-A, Attachment 2). Tables 3.7-6 and 3.7-7 list the amount of terrestrial and aquatic habitat (in acres) that would potentially be temporarily affected by the HST alternative alignments.

In terms of calculated impacts, selection of the Wasco-Shafter Alternative would have similar impacts on natural habitats when compared to the corresponding segment of the BNSF Alternative (Table 3.7-6; Table 3.7-7; Appendix 3.7-B, Attachment 2). Depending on the species-

specific habitat requirements, the selection of the Wasco-Shafter Bypass would either increase or decrease impacts on special-status wildlife species.

Invertebrates: The Wasco-Shafter Bypass Alternative does not contain suitable habitat (e.g., vernal pools) for vernal pool fairy shrimp and vernal pool tadpole shrimp. Elderberry shrubs, the sole host plant of the valley elderberry longhorn beetle, have not been identified in the Wasco-Shafter Bypass Alternative. However, this species could be affected where construction activities would occur in natural areas associated with Poso Creek. Special-status invertebrates would be temporarily affected, both directly and indirectly, by construction of this alternative. Construction period impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status invertebrate species because of the temporary direct and indirect impacts on these species and their habitats.

Fish: Special-status fish species are not expected to occur within the Wasco-Shafter Bypass Alternative, as streams within this alternative are inaccessible either because of extensive water diversions and in-stream obstructions to migratory movement or because they are outside the range of special-status fish species. Therefore, no direct or indirect impacts on special-status fish would result from construction of this alternative. Construction period impacts under the Wasco-Shafter Bypass Alternative would result in no effect under NEPA and no impact under CEQA on special-status fish species. However, construction period impacts under the Wasco-Shafter Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status fish species. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on special-status fish species and their habitats.

Amphibians: The Wasco-Shafter Bypass Alternative contains limited suitable habitat (e.g., riverine) for special-status amphibian species (Appendix 3.7-A, Attachment 2). Special-status amphibians would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status amphibian species because of the temporary direct and indirect impacts on these species and their habitats.

Reptiles: The Wasco-Shafter Bypass Alternative contains fragmented habitat (e.g., annual grassland, riverine, lacustrine) for special-status reptiles, including western pond turtle. Because suitable habitats in the Wasco-Shafter Bypass Alternative are small and fragmented, the potential for special-status reptiles to occur may be limited (Appendix 3.7-A, Attachment 2). Special-status reptiles would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status reptile species because of the temporary direct and indirect impacts on these species and their habitats.

Birds (includes all migratory birds covered under MBTA): The Wasco-Shafter Bypass Alternative contains suitable habitat (including both natural habitats and agricultural land uses) for special-status birds along much of its length. Special-status birds would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status bird species because of the temporary direct and indirect impacts on these species and their habitats.

Mammals: The Wasco-Shafter Bypass Alternative contains suitable habitat for special-status mammals (Appendix 3.7-A, Attachment 2). The agricultural land uses likely provide little value for breeding or foraging special-status mammal species. However, these areas may be suitable for dispersal and foraging activities. Special-status mammals would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status mammal species because of the temporary direct and indirect impacts on these species and their habitats.

Bakersfield South Alternative Alignment

Construction of the Bakersfield South Alternative would result in direct and indirect impacts on a number of special-status wildlife species and their habitat. These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The amount of temporary impacts associated with construction period impacts is provided in Appendix 3.7-B, Attachment 2. The potential for the various special-status wildlife species to occur throughout Bakersfield South Alternative varies according to the species' known geographic range, and the presence of suitable habitat capable of supporting the species' life history (Appendix 3.7-A, Attachment 2). Tables 3.7-6 and 3.7-7 list the amount of terrestrial and aquatic habitat (in acres) that would potentially be temporarily affected by the HST alternative alignments.

Both the Bakersfield South Alternative and the corresponding BNSF Alternative segment are located in a highly urbanized portion of metropolitan Bakersfield. Both alternatives would affect small areas of habitat that could support special-status wildlife species. The magnitude of these impacts is similar.

Invertebrates: The Bakersfield South Alternative does not contain suitable habitat (e.g., vernal pools) for vernal pool fairy shrimp and vernal pool tadpole shrimp. Elderberry shrubs, the sole host plant of the valley elderberry longhorn beetle, have not been identified in the Bakersfield South Alternative. However, this species could be affected where construction activities would occur in natural areas and in association with the Kern River. Special-status invertebrates would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status invertebrate species because of the temporary direct and indirect impacts on these species and their habitats.

Fish: Within the Bakersfield South Alternative, a small amount of marginal habitat (i.e., riverine) for the Kern brook lamprey is present in the Friant-Kern Canal. Kern brook lamprey has a low potential to be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status fish species because of the potential temporary direct and indirect impacts on this species and its habitats.

Amphibians: The Bakersfield South Alternative contains limited suitable habitat (e.g., riverine, alkali desert scrub, and annual grassland) that may support western spadefoot toad (Appendix 3.7-A, Attachment 2). Because suitable habitats in the Bakersfield South Alternative are small and fragmented, the potential for special-status amphibians to occur may be limited (Appendix 3.7-A, Attachment 2). Special-status amphibians would be temporarily affected, both directly and

indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status amphibian species because of the temporary direct and indirect impacts on these species and their habitats.

Reptiles: The Bakersfield South Alternative contains suitable habitat (e.g., annual grassland and alkali desert scrub) for special-status reptiles, including coast horned lizard. Because suitable habitats in the Bakersfield South Alternative are small and fragmented, the potential for special-status reptiles to occur may be limited (Appendix 3.7-A, Attachment 2). Special-status reptiles would be temporarily affected, both directly and indirectly, by construction of this alternative. Construction period impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status reptile species because of the temporary direct and indirect impacts on these species and their habitats.

Birds (includes all migratory birds covered under MBTA): The Bakersfield South Alternative contains suitable habitat (including both natural habitats, agricultural land uses) for a variety of special-status birds, including burrowing owl. The natural areas provide suitable habitat for breeding, foraging, and migration stopover habitat. Special-status bird species and their habitat would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status bird species because of the temporary direct and indirect impacts on these species and their habitats.

Mammals: The Bakersfield South Alternative contains suitable habitat (i.e., annual grasslands, valley foothill riparian, barren), for special-status mammals, including San Joaquin Kit fox and special-status bats. In addition, urban land uses in Bakersfield are utilized by the San Joaquin kit fox. Special-status mammals would be temporarily affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Construction period impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status mammal species because of the temporary direct and indirect impacts on these species and their habitats.

Habitats of Concern

As described in Section 3.7.4, habitats of concern occur within the various study areas and include special-status plant communities, jurisdictional waters, critical habitat, conservation areas, and protected trees (Figures 3.7-1a through 3.7-1d). Attachments 3, 4, and 5 of Appendix 3.7-B provide a comparison of impacts on habitats of concern by alternative. The HST alternatives were selected over time to avoid sensitive biological resources and/or to provide project design features, such as elevated sections, to minimize direct effects while accommodating operation requirements.

Direct Impacts during Construction Period Impacts

Construction activities within and adjacent to the construction footprint would have direct impacts on habitats of concern. These impacts would include those created by crews removing special-status plant communities, and from construction vehicles and personnel in the areas disturbing (i.e., trampling and crushing) special-status plants. With respect to vegetation removal, it should be noted that vegetation within the HST right-of-way would be permanently removed. However,

adjacent vegetation requiring removal to accommodate construction operations (i.e., access and laydown area) would be restored after construction activities are completed.

Construction-related direct impacts on jurisdictional waters include the placement of temporary fill during construction in both man-made and natural jurisdictional waters. Temporary fill would be placed during the construction of access roads and staging/equipment storage areas. This fill would result in a temporary loss of jurisdictional waters and could potentially increase erosion and sediment transport into adjacent areas.

Direct impacts during construction on critical habitat include ground-disturbing activities within designated or proposed critical habitat for federally listed species. As a result of these activities, critical habitat potentially occupied by federally listed species could be temporarily disturbed or removed.

Construction-related direct impacts on federal recovery plan areas include the creation of temporary partial or total movement barriers to special-status species.

Construction activities could directly affect biological resources associated with the Allensworth ER, as described in Section 3.7.5 (Construction Period Impacts, Special-Status Wildlife Species), 3.7.5 (Construction Period Impacts, Special-Status Plant Species), and Section 3.7.5 (Construction Period Impacts, Habitats of Concern, Jurisdictional Waters). However, because of the proximity to existing linear features (e.g., BNSF and SR 43) the biological resources are likely to be only indirectly affected.

Construction would interfere with, disturb, or conflict with the objectives, goals, and/or provisions and targeted conservation areas identified in HCPs; Natural Community Conservation Planning (NCCP); or other approved local, regional, or state conservation plans or areas of conservation. Direct impacts would occur through the loss or degradation of special-status plant and wildlife species and lands that could support or provide habitat for these species. Also, the conservation plans identify areas that should be targeted for long-term conservation or recovery of special-status species. Therefore, impacts on the identified areas would result in conflicts with the overall objectives, goals, or provisions of the various plans.

Construction of the HST project would result in the temporary removal or modification of protected trees within the construction footprint. Where the alignment is at-grade, removal or trimming of all protected trees is anticipated. Where the alignment is on an elevated structure in urban areas (the location of the majority of the landscaped ornamental trees), trimming and limited removal of protected trees would occur.

Indirect Impacts during Construction Period Impacts

Indirect impacts would include contamination of habitats of concern outside the construction footprint from construction equipment leaks; construction-related dust reducing photosynthetic capability (especially during flowering periods); and an increased risk of fire (e.g., construction equipment use and smoking by construction workers) in adjacent open spaces.

Temporary indirect construction-related impacts on sensitive biological communities would include fragmentation and introduction of non-native, invasive plant species. These changes would result in decreased viability and gradual loss of sensitive biological communities. Fragmentation would result from the construction of temporary features, especially linear features, including access roads that bisect sensitive biological communities. Construction activities could facilitate the spread of non-native invasive plant species through introduction of seeds by construction equipment, vehicles, and personnel.

Potential indirect impacts on jurisdictional waters include a number of water-quality-related impacts: erosion, siltation, and runoff into natural and constructed water features and fill downstream of the construction footprint. These discharges would have indirect adverse impacts on adjacent or downstream jurisdictional waters.

Indirect construction-related impacts on critical habitat would include erosion, siltation, and runoff into nearby designated or proposed critical habitat for federally listed species. As a result, critical habitat potentially occupied by federally listed species could be temporarily degraded.

Construction-related indirect impacts on federal recovery plan areas would include fragmentation of satellite areas and linkages where recovery areas are crossed by temporary construction activities (e.g., staging areas and access roads) and disturbance of natural lands within recovery areas that reduces habitat value for species recovery.

Construction-related indirect impacts on the Allensworth ER would be similar to those described in Section 3.7.5 (Construction Period Impacts, Special-Status Wildlife Species), 3.7.5 (Construction Period Impacts, Special-Status Plant Species), and Section 3.7.5 (Construction Period Impacts, Habitats of Concern, Jurisdictional Waters).

Construction could interfere with, disturb, or conflict with the objectives, goals, and/or provisions and targeted conservation areas identified in HCPs; NCCPs; or other approved local, regional, or state conservation plans, and areas of conservation (e.g., the *Metropolitan Bakersfield Habitat Conservation Plan* [City of Bakersfield and Kern County 1994]). Indirect impacts would include erosion, siltation, and runoff into nearby lands that could support or provide habitat for special-status plant and wildlife species. Therefore, impacts on the identified areas would result in conflicts with the overall objectives, goals, or provisions of the various plans.

BNSF Alternative Alignment

Special-Status Plant Communities

Eight special-status plant communities are present within the BNSF Alternative: iodine bush scrub, alkali goldenbush scrub, bush seepweed scrub, saltgrass flats, Fremont cottonwood forest, black willow thickets, red willow thickets, and other natural lands (including valley foothill riparian areas). In addition to the special-status plant communities that have been observed, a number of special-status plant communities could occur in unsurveyed habitats that have the potential to support special-status plant communities where permission to enter was not available. Impacts on special-status plant communities would occur through the same mechanisms as those described above under the direct and indirect impacts on habitats of concern. No temporary impacts would occur within areas of known special-status plant communities, but temporary impacts would occur in unsurveyed habitats that may support special-status plant communities (Appendix 3.7-B, Attachment 3).

Construction period impacts under the BNSF Alternative would have a moderate effect on special-status plant communities and their habitats under NEPA. The impact would be significant under CEQA. These determinations are due to the temporary direct and indirect impacts on these communities.

Jurisdictional Waters

Wetlands and other waters, including seasonal wetlands, vernal pools, canals, culverts, agricultural ditches, reservoirs, retention/detention basins, and riverine features are present throughout the BNSF Alternative. Direct and indirect impacts would occur during construction of the BNSF Alternative, resulting in the temporary disturbance of jurisdictional waters (Appendix

3.7-B, Attachment 4). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Construction period impacts under the BNSF Alternative would have a moderate effect on jurisdictional waters under NEPA. The impact would be significant under CEQA. These determinations are due to the temporary direct and indirect impacts on these jurisdictional waters.

Critical Habitat

The BNSF Alternative overlaps designated critical habitat for the vernal pool tadpole shrimp. The BNSF Alternative overlaps approximately less than 0.01 acre of Critical Habitat Unit 27B where this unit crosses SR 43 and the BNSF Railway right-of-way. Within the footprint of the BNSF Alternative, Critical Habitat Unit 27B is composed of ruderal and annual grassland habitat that does not support Primary Constituent Elements (PCEs) (vernal pools, swales, and other ephemeral wetlands and depressions). The BNSF Alternative does not overlap Critical Habitat Unit 27C but is within 250 feet of it; however, the unit is on the far side of SR 43 and the portion of the unit within 250 of the BNSF Alternative does not support the PCEs for vernal pool fairy shrimp. No direct or indirect impacts on designated vernal pool fairy shrimp critical habitat with suitable required habitat characteristics (i.e., the PCEs) are expected as a result of construction activities.

Construction period impacts under the BNSF Alternative would result in a negligible effect under NEPA on critical habitat. The impact would be less than significant under CEQA. These determinations are due to the permanent direct and indirect impacts on this habitat.

Conservation Areas

Recovery Plans

The BNSF Alternative overlaps two recovery plans: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998) and *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005).

The BNSF Alternative overlaps the San Joaquin Valley Vernal Pool Region identified in the *Recovery Plan for Vernal Pool Ecosystems in California and Southern Oregon* (USFWS 2005), where the recovery plan crosses SR 43 and the BNSF Railway right-of-way. Construction of the BNSF Alternative would result in a small amount of temporary disturbance to the recovery plan (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The BNSF Alternative overlaps the planning area of the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). A portion of the BNSF Alternative occurs in satellite and linkage areas identified in the recovery plan. Construction of the BNSF Alternative would result in temporary impacts on the recovery plan areas identified in the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Construction period impacts under the BNSF Alternative would result in a moderate effect on recovery plans under NEPA and in a significant impact under CEQA.

Allensworth Ecological Reserve

In southern Tulare County, the BNSF Alternative would overlap the eastern boundary of the Allensworth ER. No temporary direct or indirect impacts on the Allensworth ER are anticipated as a result of construction activities (Appendix 3.7-B, Attachment 5).

Construction period impacts under the BNSF Alternative would have no effect on the Allensworth ER under NEPA and no impact under CEQA.

Habitat Conservation Plans

The BNSF Alternative overlaps two habitat conservation plans: the *Metropolitan Bakersfield Habitat Conservation Plan* and the draft *Valley Floor Habitat Conservation Plan* (City of Bakersfield and Kern County 1994; Kern County Planning Department 2006). Construction of the BNSF Alternative would result in temporary impacts on the habitat conservation plan areas (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The portion of the BNSF Alternative in Kern County occurs in the high- and low- priority conservation areas identified in the draft VFHCP (Appendix 3.7-B, Attachment 5). However, because the draft VFHCP has not been approved or adopted, the project is not currently required to comply with the provisions of the plan and therefore the project does not conflict with the provisions of the draft VFHCP.

Construction period impacts under the BNSF Alternative would result in a negligible effect on habitat conservation plans under NEPA and a less-than-significant impact under CEQA. These determinations are due to the temporary direct and indirect impacts on these plans.

Protected Trees

Trees including those regulated by various local government regulations are present along the BNSF Alternative (Appendix 3.7-B, Attachment 6), and project construction activities would both alter and remove some portion of these resources. The majority of trees are in Fresno, and almost all of the native oaks are in the vicinity of the Kings River. Direct and indirect impacts would occur during construction of the BNSF Alternative, resulting in temporary disturbance to these protected trees. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The anticipated removal and trimming of protected trees (both native and landscape ornamentals) as part of the construction activities in all four counties of the Fresno to Bakersfield Section would conflict with the relevant city and county ordinances. Therefore, construction period impacts under the BNSF Alternative would result in a moderate effect on protected trees under NEPA and in a significant impact under CEQA.

Corcoran Elevated Alternative Alignment

Special-Status Plant Communities

There are no known occurrences of special-status plant communities within the Corcoran Elevated Alternative (or its corresponding segment of the BNSF Alternative), but habitats that have the potential to support special-status plant communities are present (Appendix 3.7-A, Attachment 3). These habitats are mainly in urban and agricultural lands (Table 3.7-6 and Table 3.7-7) which have no to low potential of supporting special-status plant communities. Both the Corcoran Elevated Alternative and its corresponding segment of the BNSF Alternative would result in a similar level of temporary impacts on unsurveyed habitats that have a low potential to support special-status plant communities (Appendix 3.7-B, Attachment 3). If special-status plant communities are present in these habitats, construction period impacts under the Corcoran Elevated Alternative could directly and indirectly result in temporary impacts on these species. The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant communities.

Construction period impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status plant communities. However, construction period impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant communities. These determinations are due to the potential temporary direct and indirect impacts on these communities and their habitats.

Jurisdictional Waters

Wetlands and other waters present in the Corcoran Elevated Alternative contain culverts, agricultural canals, ditches, and retention/detention basins (Appendix 3.7-B, Attachment 4). No natural jurisdictional waters (e.g., seasonal wetlands, vernal pools, riparian, and seasonal riverine) would be temporarily affected by the use of this alternative (Appendix 3.7-B, Attachment 4). Direct and indirect impacts would occur during construction period impacts under the Corcoran Elevated Alternative, resulting in the temporary disturbance of artificial jurisdictional waters (Appendix 3.7-B, Attachment 4). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Corcoran Elevated Alternative would be located in agricultural areas east of Corcoran, whereas the corresponding BNSF Alternative segment would be routed through Corcoran, along SR 43 and the BNSF Railway right-of-way. The Corcoran Elevated Alternative would have similar temporary impacts to jurisdictional waters when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 4).

Construction period impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on jurisdictional waters. However, construction period impacts under the Corcoran Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on jurisdictional waters. These determinations are due to the temporary direct and indirect impacts on these jurisdictional waters.

Critical Habitat

Critical habitat does not occur within the footprint of the Corcoran Elevated Alternative (Appendix 3.7-B, Attachment 5). Construction period impacts under this alternative would result in no effect under NEPA and no impact under CEQA on critical habitat. However, construction of the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on critical habitat. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on this habitat.

Conservation Areas

Recovery Plans

The Corcoran Elevated Alternative overlaps one of two recovery plan areas that occur in the region: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). A portion of the Corcoran Elevated Alternative occurs in a satellite area identified in the recovery plan area. Temporary direct or indirect impacts would occur on the recovery plan area as a result of construction of this alternative (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern. Selection of the Corcoran Elevated Alternative would slightly increase the

amount of temporary disturbance to the recovery plan area when compared with the amount in the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Corcoran Elevated Alternative nor the corresponding BNSF Alternative segment runs through the recovery plan area of the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). Therefore, no temporary direct or indirect impacts on this recovery plan would occur as a result of construction of either of these alternatives.

Construction period impacts under the Corcoran Elevated Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on recovery plans because of the temporary direct and indirect impacts on these plans.

Allensworth Ecological Reserve

Neither the Corcoran Elevated Alternative nor its corresponding segment in the BNSF Alternative overlaps the Allensworth ER (Appendix 3.7-B, Attachment 5). Therefore, no temporary direct or indirect impacts to the Allensworth ER would occur as a result of construction of either of these alternatives.

Construction period impacts under the Corcoran Elevated Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in no effect under NEPA and no effect under CEQA on Allensworth ER.

Habitat Conservation Plans

Neither the Corcoran Elevated Alternative nor its corresponding segment in the BNSF Alternative overlaps the plan areas of the two habitat conservation plans identified in the vicinity: the MBHCP and the draft VFHCP (Appendix 3.7-B, Attachment 5). Therefore, no temporary direct or indirect impacts on the habitat conservation plan areas would occur as a result of construction period impacts under either of these alternatives.

Construction period impacts under the Corcoran Elevated Alternative would result in no effect under NEPA and no impact under CEQA on habitat conservation plans. However, construction under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on habitat conservation plans. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on these plans.

Protected Trees

Trees that are regulated under the Kings County General and/or Corcoran City Code may be present in the Corcoran Elevated Alternative or the corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 6). However, no construction period impacts on protected trees were identified in either Alternative.

Construction period impacts on protected trees under the Corcoran Elevated Alternative would result in no effect under NEPA and no impact under CEQA. However, construction period impact under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect on protected trees under NEPA and a significant impact under CEQA because of the direct and indirect impacts associated with the BNSF Alternative.

Corcoran Bypass Alternative Alignment

Special-Status Plant Communities

Field surveys identified three special-status plant communities in the Corcoran Bypass Alternative: saltgrass flats, black willow thickets, and valley foothill riparian habitat located along the Tule River (Appendix 3.7-B, Attachment 3; Table 3.7-6). Additional unsurveyed habitats that have the potential to support special-status plant communities, including annual grasslands, could also support special-status plant communities. Temporary impacts would occur in identified special-status plant communities (i.e., valley foothill riparian) in the Corcoran Bypass Alternative. Temporary impacts would also occur in unsurveyed habitats that have the potential to support special-status plant communities that may support special-status plant communities. Impacts on special-status plant communities, if present, would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern. The Corcoran Bypass Alternative would result in slightly more temporary impacts on valley foothill riparian than its corresponding BNSF Alternative (Table 3.7-6). Both the Corcoran Elevated Alternative and its corresponding segment of the BNSF Alternative would result in a similar level of temporary impacts on unsurveyed habitats that have the potential to support special-status plant communities (Appendix 3.7-B, Attachment 3).

Construction period impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant communities and their habitats because of the temporary direct and indirect impacts on these communities.

Jurisdictional Waters

Wetlands and other waters present in the Corcoran Bypass Alternative include seasonal wetlands, vernal pools, canals, culverts, ditches, retention/detention basins, and seasonal riverine (e.g., Cross Creek, Tule River) (Appendix 3.7-B, Attachment 4). Direct and indirect impacts would occur during construction of the Corcoran Bypass Alternative, resulting in the temporary disturbance of these jurisdictional waters. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Corcoran Bypass Alternative would be located in agricultural areas east of Corcoran, whereas the corresponding BNSF Alternative segment would be routed through Corcoran, along SR 43 and the BNSF Railway right-of-way. The Corcoran Bypass Alternative would have similar temporary impacts on wetlands when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 4). However, overall, the Corcoran Bypass Alternative would have slightly more temporary impacts on jurisdictional waters when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 4).

Construction period impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on jurisdictional waters because of the temporary direct and indirect impacts on these waters.

Critical Habitat

Critical habitat does not occur within the footprint of the Corcoran Bypass Alternative (Appendix 3.7-B, Attachment 5). Construction period impacts under this alternative would result in no effect under NEPA and no impact under CEQA on critical habitat. However, construction of the Corcoran Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on

critical habitat. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on this habitat.

Conservation Areas

Recovery Plans

The Corcoran Bypass Alternative overlaps one of two recovery plan areas that occur in the region: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). A portion of the Corcoran Bypass Alternative occurs in a satellite area identified in the recovery plan area. Construction of the Corcoran Bypass Alternative would result in temporary disturbance of this recovery plan area (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern. Selection of the Corcoran Bypass Alternative would result in more temporary disturbance to the recovery plan area when compared with the amount in the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Corcoran Bypass Alternative nor the corresponding BNSF Alternative segment overlaps the recovery plan area of the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). Therefore, no temporary direct or indirect impacts on this recovery plan area would occur as a result of construction of either of these alternatives.

Construction period impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on recovery plans because of the temporary direct and indirect impacts on these plans.

Allensworth Ecological Reserve

Neither the Corcoran Bypass Alternative nor its corresponding segment in the BNSF Alternative overlaps the Allensworth ER (Appendix 3.7-B, Attachment 5). Therefore, no temporary direct or indirect impacts to the Allensworth ER would occur as a result of construction of either of these alternatives.

Construction of the Corcoran Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in no effect under NEPA and in no impact under CEQA on the Allensworth ER.

Habitat Conservation Plans

Neither the Corcoran Bypass Alternative nor its corresponding segment in the BNSF Alternative overlaps the plan areas of the two habitat conservation plans identified in the vicinity: the MBHCP and the draft VFHCP (Appendix 3.7-B, Attachment 5). Therefore, no temporary direct or indirect impacts on the habitat conservation plan areas would occur as a result of construction period impacts under either of these alternatives.

Construction period impacts under the Corcoran Bypass Alternative would result in no effect under NEPA and no impact under CEQA on habitat conservation plans. However, construction under the Corcoran Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on habitat conservation plans. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on these plans.

Protected Trees

Trees that are regulated under the Kings County General and/or Corcoran City Code may be present in the Corcoran Bypass Alternative and the corresponding segment of the BNSF

Alternative (Appendix 3.7-B, Attachment 6). However, no construction period impacts were identified in either Alternative.

Construction period impacts on protected trees under the Corcoran Bypass Alternative would result in no effect under NEPA and no impact under CEQA. However, construction period impacts under the Corcoran Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect on protected trees under NEPA and a significant impact under CEQA because of direct and indirect impacts associated with the BNSF Alternative.

Allensworth Bypass Alternative Alignment

Special-Status Plant Communities

During the field surveys, five special-status plant communities were identified in the Allensworth Bypass Alternative: saltgrass flats, bush seepweed scrub, iodine bush scrub, black willow thickets, and valley foothill riparian (Appendix 3.7-B, Attachment 3; Table 3.7-6). Special-status plant communities could also be present in unsurveyed habitats that have the potential to support special-status plant communities (e.g., annual grasslands, riverine, and fragmented natural areas). Temporary impacts would occur in identified special-status plant communities (i.e., valley foothill riparian) in the Allensworth Bypass Alternative. Temporary impacts would also occur in unsurveyed habitats that have the potential to support special-status plant communities that may support special-status plant communities. Impacts on special-status plant communities, if present, would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Allensworth Bypass Alternative would result in slightly less temporary impacts on valley foothill riparian than its corresponding BNSF Alternative (Table 3.7-6). The Allensworth Bypass Alternative would result in substantially more temporary impacts on unsurveyed habitats that have the potential to support special-status plant species than the corresponding BNSF Alternative (Appendix 3.7-B, Attachment 1). If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass, this would likely additionally increase the temporary impacts on suitable habitat for special-status plant communities when compared to the corresponding segment of the BNSF Alternative.

Construction period impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant communities and their habitats because of the temporary direct and indirect impacts on these communities.

Jurisdictional Waters

Surveys for vernal pools were used to inform routing of the Allensworth Bypass to minimize impacts on wetlands and other waters (a reduction of more than 100 acres in the Wetland Study Area). Even following minimization of impacts, the Allensworth Bypass Alternative would temporarily affect seasonal wetlands and man-made features, including culverts, ditches, reservoirs, and retention/detention basins (Appendix 3.7-B, Attachment 4). Direct and indirect impacts would occur during construction of the Allensworth Bypass Alternative, resulting in the temporary disturbance of these jurisdictional waters (Appendix 3.7-B, Attachment 4). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Allensworth Bypass Alternative travels primarily through agricultural lands, in contrast with its corresponding segment under the BNSF Alternative, which runs adjacent to SR 43 and occurs along the BNSF Railway right-of-way. Selection of the Allensworth Bypass Alternative would

decrease the amount of temporary impacts on wetlands under this alternative and increase the amount of temporary impacts on other waters under this alternative (Appendix 3.7-B, Attachment 4). If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass, this could increase temporary impacts on jurisdictional waters (depending on where the BNSF tracks are located) when compared to the corresponding segment of the BNSF Alternative.

Construction period impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on jurisdictional waters because of the temporary direct and indirect impacts on these waters.

Critical Habitat

Critical habitat does not occur within the Allensworth Bypass Alternative (Appendix 3.7-B, Attachment 5). Construction period impacts under this alternative would result in no effect under NEPA and no impact under CEQA on critical habitat. However, construction of the Allensworth Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect on critical habitat under NEPA and in a less-than-significant impact under CEQA. These determinations are due to the temporary direct and indirect impacts on this habitat.

Conservation Areas

Recovery Plans

The Allensworth Bypass Alternative overlaps one of two recovery plan areas that occur in the region: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). A portion of the Allensworth Bypass Alternative occurs in satellite and linkage areas identified in the recovery plan area. Construction of the Allensworth Bypass Alternative would result in temporary disturbance of this recovery plan area (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Allensworth Bypass Alternative and its corresponding segment in the BNSF Alternative both overlap the recovery plan area for the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). Selection of the Allensworth Bypass Alternative would slightly decrease the amount of temporary disturbance to the satellite area and greatly increase the amount of temporary disturbance to the linkage area identified in the recovery plan when compared with that of the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

The Allensworth Bypass Alternative does not occur within the recovery plan area of the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). Less than 0.01 acre of the corresponding BNSF Alternative segment overlaps the recovery plan area. Selection of the Allensworth Bypass Alternative would decrease the amount of temporary disturbance to the recovery plan area when compared with that of the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5). If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass, this could increase temporary impacts on recovery plans that occur in the region when compared to the corresponding segment of the BNSF Alternative.

Construction period impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on recovery plans because of the temporary direct and indirect impacts on these plans.

Allensworth Ecological Reserve

The Allensworth Bypass Alternative does not overlap the Allensworth ER (Appendix 3.7-B, Attachment 5). This alternative is approximately 0.5 mile west of the Allensworth ER. Therefore, no direct or indirect impacts on the Allensworth ER would occur as a result of construction of this alternative. Neither construction of the Allensworth Bypass Alternative nor of its corresponding BNSF segment would result in temporary impacts on Allensworth Ecological Reserve (Appendix 3.7-B, Attachment 5).

Construction of the Allensworth Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a no effect under NEPA and no impact under CEQA to the Allensworth ER.

Habitat Conservation Plans

The Allensworth Bypass Alternative overlaps one habitat conservation plan, the draft VFHCP. Construction of the Allensworth Bypass Alternative would result in temporary disturbance of the low-priority conservation areas of the draft VFHCP (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern. However, because the draft VFHCP has not been approved or adopted, the project is not currently required to comply with the provisions of the plan. Therefore, the project does not conflict with the provisions of the draft VFHCP.

The Allensworth Bypass Alternative would decrease the amount of temporary disturbance to low-priority conservation zones identified in the VFHCP when compared with that of the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Allensworth Bypass Alternative nor its corresponding BNSF segment runs through the planning area of the MBHCP. Therefore, no temporary direct or indirect impacts on the MBHCP would occur as a result of construction of either of these alternatives.

If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass, this could increase temporary impacts on HCPs that occur in the region when compared to the corresponding segment of the BNSF Alternative.

Construction period impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on habitat conservation plans. These determinations are due to the temporary direct and indirect impacts on these plans.

Protected Trees

While a few trees are present, no construction period impacts on protected trees were identified in the Allensworth Bypass Alternative or in the corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 6). If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass, temporary impacts on protected trees may occur.

Construction period impacts on protected trees under the Allensworth Bypass Alternative would result in no effect under NEPA and no impact under CEQA. However, construction period impacts under the Allensworth Bypass Alternatives, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect on protected trees under NEPA and in a significant impact under CEQA because of the direct and indirect impacts associated with the BNSF Alternative.

Wasco-Shafter Bypass Alternative Alignment

Special-Status Plant Communities

There are no known occurrences of special-status plant communities within the Wasco-Shafter Bypass Alternative. However, special-status plant communities have the potential to occur in unsurveyed habitats that have the potential to support special-status plant communities within this alternative (Appendix 3.7-A, Attachment 1). Temporary impacts would occur in these unsurveyed habitats that may support special-status plant communities. Impacts on special-status plant communities, if present, would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Wasco-Shafter Bypass Alternative would result in slightly more temporary impacts to unsurveyed habitats that have the potential to support special-status plant communities than the corresponding BNSF Alternative (Appendix 3.7-B, Attachment 3).

Construction period impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant communities and their habitats because of the temporary direct and indirect impacts on these communities.

Jurisdictional Waters

Jurisdictional waters in the Wasco-Shafter Bypass Alternative only include man-made structures (e.g., culverts, ditches, and retention/detention basins) (Appendix 3.7-B, Attachment 4). No natural jurisdictional waters (e.g., seasonal wetlands, vernal pools, riparian, and seasonal riverine) would be permanently affected by the use of this alternative (Appendix 3.7-B, Attachment 4). Direct and indirect impacts would occur during construction of the Wasco-Shafter Bypass Alternative, resulting in the temporary disturbance of these artificial jurisdictional waters (Appendix 3.7-B, Attachment 4). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Wasco-Shafter Bypass Alternative avoids urban centers and travels entirely through agricultural areas east of SR 43, whereas the corresponding BNSF Alternative segment travels through the urban centers of Wasco and Shafter along the existing, disturbed BNSF Railway right-of-way. Regardless of the alternative, the majority of the impacts would be to man-made features that provide limited ecological value. When considering the magnitude of the impacts, the selection of the Wasco-Shafter Bypass Alternative would marginally decrease the amount of temporary impacts on jurisdictional waters when compared with the amount in the corresponding segment of the BNSF Alternative. These differences would be negligible, considering the man-made nature of the majority of these resources (Appendix 3.7-B, Attachment 4).

Construction period impacts under the Wasco-Shafter Bypass Alternative would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on jurisdictional waters. However, construction period impacts under the Wasco-Shafter Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on jurisdictional waters. These determinations are due to the temporary direct and indirect impacts on these jurisdictional waters.

Critical Habitat

Critical habitat does not occur within the Wasco-Shafter Bypass Alternative (Appendix 3.7-B, Attachment 5). Construction period impacts under this alternative would result in no effect under NEPA and no impact under CEQA on critical habitat. However, construction of the Wasco-Shafter

Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect on critical habitat under NEPA and in a less-than-significant impact under CEQA. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on this habitat.

Conservation Areas

Recovery Plans

The Wasco-Shafter Bypass Alternative overlaps one recovery plan: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). A portion of the Wasco-Shafter Bypass occurs in a linkage area identified in this recovery plan. Construction of the Wasco-Shafter Bypass Alternative would result in temporary disturbance of this recovery plan area (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Wasco-Shafter Bypass Alternative and the corresponding segment in the BNSF Alternative both overlap the recovery plan area for the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). Selection of the Wasco-Shafter Bypass Alternative would slightly increase the amount of temporary disturbance to the linkage recovery plan area when compared with the amount of disturbance in the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Wasco-Shafter Bypass Alternative nor its corresponding segment of the BNSF Alternative overlaps the planning area of the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). Therefore, no temporary direct or indirect impacts on this recovery plan area would occur as a result of construction of either of these alternatives.

Construction period impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on recovery plans because of the temporary direct and indirect impacts on these plans.

Allensworth Ecological Reserve

Neither the Wasco-Shafter Bypass Alternative nor its corresponding segment in the BNSF Alternative overlaps the Allensworth ER (Appendix 3.7-B, Attachment 5). Therefore, no temporary direct or indirect impacts to the Allensworth ER would occur as a result of construction of these alternatives.

Construction period impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in no effect under NEPA and no effect under CEQA on the Allensworth ER.

Habitat Conservation Plans

The Wasco-Shafter Bypass Alternative overlaps two habitat conservation plans: the MBHCP and the draft VFHCP. Construction of the Wasco-Shafter Bypass Alternative would result in temporary disturbance of the habitat conservation plan areas (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Wasco-Shafter Bypass Alternative occurs in the low-priority conservation areas identified in the draft VFHCP. However, because the draft VFHCP has not been approved or adopted, the project is not currently required to comply with the provisions of the plan and therefore the project does not conflict with the provision of the provisions of the draft VFHCP.

Both the Wasco-Shafter Bypass Alternative and the corresponding BNSF Alternative segment occur within low-priority areas of the draft VFHCP. Selection of the Wasco-Shafter Bypass Alternative would greatly decrease the amount of temporary disturbance to the draft VFHCP plan area when compared with the amount of disturbance in the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Construction of the Wasco-Shafter Bypass Alternative would not result in temporary impacts on the MBHCP plan area (Appendix 3.7-B, Attachment 5). Selection of the Wasco-Shafter Bypass Alternative would increase the amount of temporary disturbance to the MBHCP plan area when compared with the amount of disturbance in the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Construction period impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on habitat conservation plans. These determinations are due to the temporary direct and indirect impacts on these plans.

Protected Trees

While trees are present, no construction period impacts on protected trees were identified in the in the Wasco-Shafter Bypass or in the corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 6).

Construction period impacts on protected trees under the Wasco-Shafter Bypass would result in no effect under NEPA and no impact under CEQA. However, construction of the Wasco-Shafter Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect on protected trees under NEPA and in a significant impact under CEQA because of the direct and indirect impacts associated with the BNSF Alternative.

Bakersfield South Alternative Alignment

Special-Status Plant Communities

During the field surveys, valley foothill riparian was identified along the Kern River of the Bakersfield South Alternative (Appendix 3.7-B, Attachment 3; Table 3.7-6). Additionally, this alternative includes unsurveyed habitats that may support special-status plant communities. However, the Bakersfield South Alternative is in an urban setting, and the remaining natural areas are small and fragmented; therefore, special-status plant communities are not expected to be present (except where identified along the Kern River). Temporary impacts would occur in one identified special-status plant communities (i.e., valley foothill riparian) in the Bakersfield South Alternative. Temporary impacts would also occur in unsurveyed habitats that have the potential to support special-status plant communities that may support special-status plant communities. Impacts on special-status plant communities would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern. Selection of the Bakersfield South Alternative would cause slightly more temporary impacts on one special-status plant community (i.e., valley foothill riparian) and unsurveyed habitats that have the potential to support special-status plant communities than would the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 3). Riparian habitat along the Kern River Corridor receives additional protection under Chapter 19.73 of the Kern County ordinances.

Construction period impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant communities and their habitats because of the temporary direct and indirect impacts on these communities.

Jurisdictional Waters

Wetlands and other waters in the Bakersfield South Alternative include seasonal riverine (e.g., Kern River) and the associated riparian buffer, seasonal wetlands, as well as culverts, canals, ditches, and retention/detention basins. Direct and indirect impacts would occur during construction of the Bakersfield South Alternative, resulting in the temporary disturbance of these jurisdictional waters (Appendix 3.7-B, Attachment 4). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Both the Bakersfield South Alternative and the corresponding BNSF Alternative segment would be located in areas of urban Bakersfield that contain similar man-made and natural wetlands and other waters. In some instances, because the alternatives are located close together, nearly identical impacts on the various jurisdictional waters are anticipated. When compared with the corresponding segment of the BNSF Alternative, the Bakersfield South Alternative would marginally increase the amount of temporary impacts on other waters (Appendix 3.7-B, Attachment 4). Both the Bakersfield South Alternative and the corresponding BNSF Alternative segment would not temporarily impacts wetlands (Appendix 3.7-B, Attachment 4).

Construction period impacts under the Bakersfield North Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on jurisdictional waters because of the temporary direct and indirect impacts on these waters.

Critical Habitat

Critical habitat does not occur within the footprint of the Bakersfield South Alternative (Appendix 3.7-B, Attachment 5). Construction period impacts under this alternative would result in no effect under NEPA and no impact under CEQA on critical habitat. However, construction of the Bakersfield South Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect on critical habitat under NEPA and in a less-than-significant impact under CEQA. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on this habitat.

Conservation Areas

Recovery Plans

The Bakersfield South Alternative overlaps one of two recovery plan areas that occur in the region: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). A portion of the Bakersfield South Alternative occurs in a satellite area identified in this recovery plan. Construction of the Bakersfield South Alternative would result in temporary disturbance of this recovery plan area (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Selection of the Bakersfield South Alternative would increase the amount of temporary disturbance to this recovery plan area when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Bakersfield South Alternative nor the corresponding BNSF Alternative segment overlaps the recovery plan area of the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). Therefore, no temporary direct or indirect impacts on this recovery plan area would occur as a result of construction of either of these alternatives.

Construction period impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on recovery plans because of the temporary direct and indirect impacts on these plans.

Allensworth Ecological Reserve

Neither the Bakersfield South Alternative nor its corresponding segment in the BNSF Alternative overlaps the Allensworth ER (Appendix 3.7-B, Attachment 5). Therefore, no temporary direct or indirect impacts on the Allensworth ER would occur as a result of construction of either of these alternatives.

Construction of the Bakersfield South Alternative, when considered with the remaining segments of the BNSF Alternative, would result in no effect under NEPA and in no impact under CEQA on the Allensworth ER.

Habitat Conservation Plans

The Bakersfield South Alternative overlaps one habitat conservation plan, the MBHCP. Construction of the Bakersfield South Alternative would result in temporary disturbance of the planning area of the MBHCP (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Bakersfield South Alternative and the corresponding BNSF Alternative segment both overlap the plan area for the MBHCP. Selection of the Bakersfield South Alternative would increase the amount of temporary disturbance to the habitat conservation plan area when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Bakersfield South Alternative nor the corresponding BNSF Alternative segment overlaps the plan area for the draft VPHCP. Therefore, no temporary direct or indirect impacts on the draft VPHCP plan area would occur as a result of construction of either of these alternatives.

Construction period impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on habitat conservation plans. These determinations are due to the temporary direct and indirect impacts on these plans.

Protected Trees

Trees that may be regulated are present in the Bakersfield South Alternative (Appendix 3.7-B, Attachment 6). Direct and indirect impacts would occur during construction of the Bakersfield South Alternative and would result in the disturbance of protected trees. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern. Selection of the Bakersfield South Alternative would increase the number of trees removed; however, all of the trees were unidentified and may not qualify as protected trees.

Construction period impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on protected trees because of the direct and indirect impacts on unidentified trees.

Wildlife Movement Corridors

In many places in California, fragmentation of the landscape has reduced much of the remaining habitat available to native wildlife species (Haas 2000). Current impediments to wildlife

movement in the region of the HST project include, but are not limited to, agricultural lands, urban development, SR 43, and the BNSF Railway right-of-way.

As described in Section 3.7.4(E) and shown on Figure 3.7-2, several modeled wildlife movement corridors exist within the HST alternative construction footprints:

- Kings River linkage.
- St. John's River–Cross Creek linkage.
- SR 43/SR 155 linkage.
- Deer Creek–Sand Ridge linkage.
- Poso Creek linkage.
- Kern River linkage.

This section evaluates direct and indirect impacts on wildlife movement corridors that would result from construction of each of the HST alternatives.

Direct Impacts during Construction Period Impacts

Temporary impacts from placement of barriers during construction activities would affect the ability of special-status species and other free-ranging animals to move freely within the wildlife movement corridors.

Construction activities in the SR 43/SR 155, Deer Creek–Sand Ridge, Kings River, Cross Creek, Poso Creek, and Kern River linkages would impair the tenuous habitat linkages between existing habitat blocks. Impacts associated with construction activities in the SR 43/SR 155 and Deer Creek–Sand Ridge linkages areas would impede the use of wildlife movement corridors.

Outside the riparian corridor and natural area linkages, the remainder of the construction footprint has undergone a transition to developed urban and agricultural areas. All of these features are disturbed on a daily-to-seasonal basis. These areas provide, at best, marginal habitat for wildlife. On a metapopulation level, these developed areas act as barriers to natural wildlife movement and provide little-to-no natural habitat value to most plant and wildlife species. Select species, however, have adapted and acclimated to developed habitats. The San Joaquin kit fox, for example, still persists within the city limits of Bakersfield where it inhabits vacant lots and open areas in otherwise marginal habitat. Wildlife species that have adapted to the urban environment may be affected by construction activities.

Indirect Impacts during Construction Period Impacts

Construction of the project would result in concentrated heavy vehicle and equipment use. Construction-related activities occurring at or in the vicinity of wildlife movement corridors may result in indirect disruption of wildlife movement through lighting, noise, motion, and startle effects. Construction activities would also potentially affect wildlife in adjacent habitats by interfering with movement patterns or by causing wildlife to temporarily avoid areas adjacent to the construction areas.

BNSF Alternative Alignment

The BNSF Alternative passes through all of the identified linkages discussed above; thus this alternative would directly and indirectly affect regional wildlife movement. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for wildlife movement corridors.

In portions of the urban areas of Fresno, Wasco, Shafter, and Bakersfield, and in the vicinity of riparian corridors associated with portions of the St. John's River–Cross Creek, SR 43/SR 155,

Deer Creek–Sand Ridge, and Kern River linkages, the BNSF Alternative would be constructed on an elevated structure (Figure 3.7-2), resulting in open areas at ground level for wildlife movement. However, the identified linkages would probably be blocked by fencing during construction activities, which would likely result in adverse effects on local wildlife movement. Because the BNSF Alternative would be constructed along existing infrastructure corridors (e.g., SR 43 and BNSF) construction period activities would compound the existing direct and indirect effects of existing wildlife movement barriers.

Construction of the BNSF Alternative would result in a moderate effect under NEPA on wildlife movement corridors during construction. The impact would be significant under CEQA.

Corcoran Elevated Alternative Alignment

The Corcoran Elevated Alternative does not overlap an identified wildlife movement corridor. Both the Corcoran Elevated Alternative and the corresponding BNSF Alternative segment would not affect identified wildlife movement corridors.

Construction period impacts under the Corcoran Elevated Alternative would result in no effect under NEPA and no impact under CEQA on wildlife movement corridors. However, construction period impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on wildlife movement corridors. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on these corridors.

Corcoran Bypass Alternative Alignment

The Corcoran Bypass Alternative passes through the SR 43/SR 155 and St. John's River–Cross Creek linkages; thus this alternative would directly and indirectly affect wildlife movement corridors. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for wildlife movement corridors.

The Corcoran Bypass Alternative would result in greater impacts on wildlife movement corridors than the corresponding segment of the BNSF Alternative, because the Corcoran Bypass Alternative would largely bisect natural land blocks at-grade where wildlife currently move unobstructed.

However, in general, the impacts on wildlife movement corridors associated with the construction (i.e., temporary activities) of the Corcoran Bypass Alternative would be similar to the impacts associated with the corresponding BNSF Alternative segment.

Construction period impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on wildlife movement corridors because of the temporary direct and indirect impacts on these corridors.

Allensworth Bypass Alternative Alignment

The Allensworth Bypass Alternative passes through the SR 43/SR 155, Deer Creek–Sand Ridge, and Poso Creek linkages, and has the potential to affect wildlife movement corridors in these linkages. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for wildlife movement corridors. Both the Allensworth Bypass Alternative and the corresponding BNSF Alternative segment would affect natural lands, including annual grasslands, which provide suitable habitat for a number of wildlife species.

The use of the Allensworth Bypass Alternative would create a new wildlife barrier, because it is primarily a new linear corridor constructed predominantly at-grade. However, because the Allensworth Bypass Alternative would not be constructed adjacent to existing infrastructure (e.g., SR 43 and the BNSF railroad), the construction barrier to wildlife movement would not be compounded as the corresponding BNSF Alternative segment. However, if the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass Alternative, this would compound the barriers to wildlife movement in this area.

If the BNSF tracks are not relocated to be adjacent to the HST tracks in the Allensworth Bypass Alternative, the impacts associated with the Allensworth Bypass Alternative (further fragmentation of the linkage in a new linear corridor) would be less detrimental to wildlife movement corridors when compared with the impacts associated with the corresponding BNSF Alternative segment (further impairment/fragmentation of an existing linear corridor). However, if the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass Alternative, impacts to wildlife movement corridors would be similar between the Allensworth Bypass Alternative and its corresponding segment of the BNSF Alternative, and could potentially be worse since it would be a new compounded wildlife barrier.

In general, the impacts on wildlife movement corridors associated with the construction (i.e., temporary activities) of the Allensworth Bypass Alternative would be similar to the impacts associated with the corresponding BNSF Alternative segment.

Construction period impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on wildlife movement corridors because of the temporary direct and indirect impacts on these corridors.

Wasco-Shafter Bypass Alternative Alignment

The Wasco-Shafter Bypass Alternative does not overlap an identified wildlife movement corridor. Both the Wasco-Shafter Bypass Alternative and the corresponding BNSF Alternative segment would not affect identified wildlife movement corridors.

Construction period impacts under the Wasco-Shafter Bypass Alternative would result in no effect under NEPA and no impact under CEQA on wildlife movement corridors. However, construction period impacts under the Wasco-Shafter Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on wildlife movement corridors. These determinations are due to the temporary direct and indirect impacts associated with the BNSF Alternative on these corridors.

Bakersfield South Alternative Alignment

The Bakersfield South Alternative passes through the Kern River linkage and has the potential to affect wildlife movement corridors. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for wildlife movement corridors. Project design in this area would use an elevated structure throughout the entire area of Bakersfield for both the Bakersfield South Alternative and the corresponding BNSF Alternative segment (Figure 3.7-2). Impacts on wildlife movement through the corridor would occur during construction activities. However, under both alternatives, the Kern River linkage corridor would be blocked by fencing during construction activities, which would likely result in adverse effects on local wildlife movement.

The use of the Bakersfield South Alternative rather than the corresponding BNSF Alternative would not change the level or degree of impacts because impacts on wildlife movement corridors would be similar.

Construction period impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on wildlife movement corridors because of the temporary direct and indirect impacts on these corridors.

Project –Related Impacts – Common Biological Resource Impacts

Sensitive biological resources occurring adjacent to and within the construction footprint are expected to incur direct and indirect impacts from the project. These direct and indirect impacts would be common through all HST alternatives. The following sections discuss how the HST alternatives would affect these biological resources.

Special-Status Plant Species

Direct Project-Related Impacts

Direct impacts on special-status plant species would result from the permanent removal of vegetation from within the HST system footprint and from the disturbance (i.e., trampling and crushing) of individuals, populations, or suitable potential habitat for special-status plant species from the use of heavy machinery to clear, excavate, compact, or otherwise prepare the ground surface for the construction of permanent features. Disturbance of individuals, populations, or suitable potential habitat for these special-status plant species could occur during ongoing operation and maintenance activities (e.g., routine inspection and maintenance of the HST right-of-way). Vehicle or foot traffic would also trample or crush the native vegetation.

Direct impacts include the permanent removal of special-status plant communities and land cover types that provide habitat for a number of special-status plants. Based on the habitat requirements of special-status plants, an estimated 55 species have a potential to occur within the HST alternatives. Some areas within the study areas and the corresponding limits of disturbance were not made available for pedestrian field surveys. Therefore, inaccessible areas with potentially suitable habitat present are considered occupied by special-status plant species. For these reasons, all the HST alternatives have various amounts of suitable habitat for special-status species. Depending on the amount of affected habitat, the projected adverse effect may be considered moderate to substantial with respect to NEPA and significant under CEQA.

Indirect Project-Related Impacts

Indirect impacts on special-status plant species are anticipated to include:

- Increased erosion, sedimentation, siltation from runoff, and hydrology that could affect adjacent aquatic habitats.
- Wind erosion effects (including from unvegetated rights-of-way and passing high-speed trains).
- Increased risk of fire in adjacent open spaces from increased human activity.
- Habitat degradation through changes in habitat heterogeneity, fragmentation, and the introduction of non-native invasive plant species (could significantly disrupt the habitat and result in the decreased viability of special-status plant populations).

- Fragmentation from the construction of permanent features, especially linear features, including track and access roads that bisected natural habitats.
- Introduction of noxious plant species (non-native, detrimental species) from construction equipment and vehicles, increasing competition for resources (i.e., sun, water) and decreasing success in blooming, flowering, pollinating, seeding, and setting seed (annuals).
- Indirect project impacts would be less during the operation of the HST as project design features would be in place to direct water flow.

BNSF Alternative Alignment

Two special-status plant species, heartscale and little mouse tail, are known to occur in the BNSF Alternative. Additionally, special-status plant species have potential to occur in habitats that have the potential to support special-status plant species within the BNSF Alternative (Appendix 3.7-A, Attachment 1). The above-mentioned direct and indirect impacts would potentially occur, resulting in the permanent loss or damage to known occurrences of heartscale and little mouse tail, and to other areas that have potential to support special-status plant species (Appendix 3.7-B, Attachment 1). The mechanisms for project impacts are discussed above under the direct and indirect impacts for special-status plant species. Project impacts under the BNSF Alternative would result in a substantial effect under NEPA from impacts on special-status plant species. The impact would be significant under CEQA. These determinations are due to the permanent direct and indirect impacts on these species and their habitats.

Corcoran Elevated Alternative Alignment

No special-status plant species were identified in the Corcoran Elevated Alternative, but habitats that have the potential to support special-status plant species are present (Appendix 3.7-A, Attachment 1). These habitats are mainly in urban and agricultural lands (Table 3.7-8 and Table 3.7-9) which have no to low potential for supporting special-status plant species (Appendix 3.7-A, Attachment 1).

Both the Corcoran Elevated Alternative and the corresponding BNSF Alternative would have permanent impacts on habitats that have a low potential to support special-status plant species in the vicinity of Cross Creek. The corresponding segment of the BNSF Alternative would result in slightly more impacts on habitats that have the potential to support special-status plant species than the Corcoran Elevated Alternative (Appendix 3.7-B, Attachment 1). Additionally, selection of the Corcoran Elevated Alternative would further reduce indirect impacts by maintaining porosity and habitat connectivity underneath the elevated section. If special-status plant species are present in these habitats, project impacts under the Corcoran Elevated Alternative could directly and indirectly result in permanent impacts on these species. The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant species.

Project impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status plant species. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status plant species. These determinations are due to the potential permanent direct and indirect impacts on these species and their habitats.

Corcoran Bypass Alternative Alignment

One special-status plant species, heartscale, was identified in the Corcoran Bypass Alternative, as well as other habitats that have the potential to support special-status plant species (Appendix

3.7-A, Attachment 1). If special-status plant species are present in their suitable habitats, project impacts under the Corcoran Bypass Alternative could directly and indirectly result in the permanent loss or damage of special-status plant species. The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant species.

Both the Corcoran Bypass Alternative and the corresponding BNSF Alternative would occur in the natural lands in the vicinity of the Tulare Lakebed Mitigation Site. Although the corresponding BNSF Alternative would occur (in some instances) adjacent to SR 43 and the BNSF Railway right-of-way and in the urban areas of Corcoran, the Corcoran Bypass Alternative would affect more agricultural lands and annual grasslands, which are more likely to support special-status plant species.

The Corcoran Bypass Alternative would substantially increase permanent impacts on habitats that have the potential to support special-status plant species compared with the corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 1). Indirect impacts on species and on unsurveyed natural habitats with potential to support special-status plant species are greater in the Corcoran Bypass Alternative, compared with the corresponding BNSF Alternative segment, because of the potential for greater habitat fragmentation resulting from construction of the Corcoran Bypass Alternative.

Project impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status plant species because of the permanent direct and indirect impacts on these species and their habitats.

Allensworth Bypass Alternative Alignment

No special-status plant species were identified in the Allensworth Bypass Alternative, although habitats that have the potential to support special-status plant species do occur (Appendix 3.7-A, Attachment 1). If special-status plant species are present in their suitable habitats, project impacts under the Allensworth Bypass Alternative could directly and indirectly result in the permanent loss or damage of special-status plant species. The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant species.

Selection of the Allensworth Bypass Alternative would decrease permanent impacts to known occurrences of heartscale and little mouse tail when compared with the corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 1). However, the Allensworth Bypass Alternative would result in substantially greater permanent direct impacts on habitats that have the potential to support special-status plant species (Appendix 3.7-B, Attachment 1). Indirect impacts on these species are greater in the Allensworth Bypass Alternative compared with the corresponding segment of the BNSF Alternative, because of habitat fragmentation resulting from construction of a new transportation alignment.

Both alternatives would occur in the natural lands in the vicinity of the Allensworth Ecological Reserve (ER). However, the corresponding BNSF Alternative would occur adjacent to SR 43 and the BNSF Railway right-of-way, while the Allensworth Bypass Alternative would affect agricultural lands and natural areas that could provide greater habitat value for special-status plant species. Additionally, the Allensworth Bypass Alternative would create a new transportation alignment in these habitats, resulting in an increase in indirect impacts (i.e., habitat fragmentation) compared with the BNSF Alternative, which follows existing transportation alignments.

If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass, this would likely additionally increase the permanent impacts on suitable habitat for special-status plant species when compared to the corresponding segment of the BNSF Alternative.

Project impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect on special-status plant species under NEPA and in a significant impact under CEQA because of the permanent direct and indirect impacts on these species and their habitats.

Wasco-Shafter Bypass Alternative Alignment

There are no known occurrences of special-status plants in the Wasco-Shafter Bypass Alternative (Appendix 3.7-A, Attachment 1). Unsurveyed habitats that could support special-status plant species are limited in the Wasco-Shafter Bypass Alternative (and the corresponding segment of the BNSF Alternative) by a number of factors, including the conversion of natural lands to agricultural land uses. While suitable habitat is limited, special-status plant species have up to a moderate potential of being present in suitable habitats (Appendix 3.7-A, Attachment 1). Direct and indirect project impacts are anticipated to occur as a result of the Wasco-Shafter Bypass Alternative, resulting in the potential permanent loss or damage of special-status plant species. The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant species.

The Wasco-Shafter Bypass Alternative would have slightly more permanent impacts on natural habitats potentially used by special-status plant species than the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 1).

Both the Wasco-Shafter Bypass Alternative and the corresponding BNSF Alternative segment would occur in predominantly agricultural areas and bisect Poso Creek at nearly identical locations. Because the habitats located in both alternatives would be largely disturbed, the potential for special-status plant species to occur is low. Selection of the Wasco-Shafter Bypass Alternative would affect potential habitat for special-status plant species; however, most of this potential habitat is low quality, fragmented, and small in size.

Because the number of special-status plant species that potentially occur is the same, the potential adverse effects from construction associated with the Wasco-Shafter Bypass Alternative and the corresponding BNSF Alternative segment would be similar.

Project impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect on special-status plant species under NEPA and in a significant impact under CEQA because of the permanent direct and indirect impacts on these species and their habitats.

Bakersfield South Alternative Alignment

There are no known occurrences of special-status plants in the Bakersfield South Alternative (Appendix 3.7-A, Attachment 1). Suitable habitat for most special-status plant species is limited in the Bakersfield South Alternative (as well as in its corresponding segment of the BNSF Alternative) by a number of factors, including fragmentation and disturbance from development (urbanization) that encompasses residential, commercial, and industrial purposes. While suitable habitat is limited, special-status plant species have up to a moderate potential of being present in suitable habitats (Appendix 3.7-A, Attachment 1). Direct and indirect project impacts are anticipated to occur as a result of the Bakersfield South Alternative, resulting in the permanent loss or damage of special-status plant species. The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant species.

The Bakersfield South Alternative would result in slightly more permanent impacts on habitats that have the potential to support special-status plant species than the corresponding BNSF Alternative (Appendix 3.7-B, Attachment 1). Both alternatives would affect areas of marginal habitat that could support special-status plant species.

Project impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect on special-status plant species under NEPA and in a significant impact under CEQA because of the permanent direct and indirect impacts on these species and their habitats.

Heavy Maintenance Facility Alternatives

Fresno Works--Fresno HMF: There are no known occurrences of special-status plant species in the Fresno Works-Fresno HMF. The Fresno Works-Fresno HMF would result in permanent impacts on habitats that have the potential to support special-status plant species (12.06 acres); however, these habitats are located mostly in urban and agricultural lands (Table 3.7-10 and Table 3.7-11) and have a low to moderate potential of supporting these species (Appendix 3.7-A, Attachment 1). Direct and indirect impacts on special-status plants could occur, resulting in the permanent loss or damage to special-status plants species, as discussed above under the direct and indirect impact for species-status plant species. Project impacts under the Fresno Works-Fresno HMF would result in a moderate effect under NEPA to special-status plant species. The impact would be significant under CEQA.

Table 3.7-10
Terrestrial Communities Potentially Affected by the Heavy Maintenance Facility Alternatives
(acres): Project Operation (Permanent Impacts)

Heavy Maintenance Facility Alternatives	Developed Areas		Agricultural Lands	Annual Grassland	Valley Foothill Riparian	Alkali Desert Scrub	Pasture
	Barren	Urban					
Impact Acreage							
Fresno Works–Fresno	—	194.85	316.36	—	—	—	68.28
Kings County–Hanford	—	28.67	454.82	—	—	—	26.40
Kern Council of Governments–Wasco	—	18.03	396.81	—	—	—	—
Kern Council of Governments–Shafter East	—	10.22	483.26	0.04	—	—	—
Kern Council of Governments–Shafter West	—	28.32	448.44	—	—	—	—
Notes: — = No impact or not applicable All impacts were calculated based on 15% engineering design construction footprint.							

Table 3.7-11
Aquatic Communities Potentially Affected by the Heavy Maintenance Facility Alternatives
(acres): Permanent Impacts

Heavy Maintenance Facility Alternatives	Seasonal Wetlands and Vernal Pools	Fresh Emergent Wetland	Riverine	Lacustrine ^a
Impact Acreage				
Fresno Works–Fresno	0.67	—	4.29	1.66
Kings County–Hanford	—	—	1.88	—
Kern Council of Governments–Wasco	—	—	0.27	1.13
Kern Council of Governments–Shafter East	—	—	—	1.14
Kern Council of Governments–Shafter West	—	—	—	—
Notes:				
— = No impact or not applicable				
All impacts were calculated based on 15% engineering design construction footprint.				
^a Lacustrine areas are limited to man-made basins; the Habitat Study Area has no natural permanent lakes.				

Kings County–Hanford HMF: There are no known occurrences of special-status plant species in the Kings County–Hanford HMF. This HMF Alternative would result in permanent impacts on habitats that have the potential to support special-status plant species (39.02 acres); however, these habitats are located mostly in urban and agricultural lands (Table 3.7-10 and Table 3.7-11) and have a low to moderate potential of supporting these species (Appendix 3.7-A, Attachment 1). Direct and indirect impacts on special-status plants could potentially occur, resulting in the permanent loss or damage to special-status plants species, as discussed above under the direct and indirect impact on special-status plant species. Project impacts under the Kings County–Hanford HMF would result in a moderate effect under NEPA to special-status plant species. The impact would be less than significant under CEQA.

Kern Council of Governments–Wasco HMF: There are no known occurrences of special-status plant species in the Kern Council of Governments –Wasco HMF. No habitats capable of supporting special-status plant species are present within or directly adjacent to the Kern Council of Governments –Wasco HMF. Therefore, project impacts under the Kern Council of Governments –Wasco HMF would result in no effect under NEPA and no impact would occur under CEQA on special-status plant species.

Kern Council of Governments–Shafter East HMF: There are no known occurrences of special-status plant species in the Kern Council of Governments –Shafter East HMF. The Kern Council of Governments–Shafter East HMF would result in permanent impacts on a minor amount of habitats that have the potential to support special-status plant species (0.10 acre). Direct and indirect impacts on special-status plants could potentially occur, resulting in the permanent loss or damage to special-status plants species, as discussed above under the direct and indirect impacts on species-status plant species. However, special-status plant species have a low potential to occur in the Kern Council of Governments–Shafter HMF because the small fragments of habitat within the construction footprint are unlikely to support special-status plant species. Project impacts under the Kern Council of Governments–Shafter HMF would result in a negligible

effect on special-status plant species under NEPA. The impact would be less than significant under CEQA.

Kern Council of Governments–Shafter West HMF: There are no known occurrences of special-status plant species in the Kern Council of Governments –Shafter West HMF. No habitats capable of supporting special-status plant species are present within or directly adjacent to the Kern Council of Governments–Shafter West HMF. Therefore, project impacts under the Kern Council of Governments –Shafter West HMF would result in no effect under NEPA and no impact would occur under CEQA on special-status plant species.

Station Alternatives

Fresno Station–Mariposa, Fresno Station–Kern, Kings/Tulare Regional Station, Bakersfield Station–North, and Bakersfield Station–South Alternatives: There are no known occurrences of special-status plants species in the Station alternatives. No habitats capable of supporting special-status plant species are present in the footprint of the proposed stations alternatives. Therefore, project impacts under the all station alternatives would result in no effect under NEPA and no impact would occur under CEQA on special-status plant species.

Special-Status Wildlife Species

The following section discusses impacts, direct and indirect, resulting from operation activities on special-status wildlife species. Based on their specific habitat requirements, several special-status invertebrates and vertebrates are likely to occur in the construction footprint.

The majority of special-status wildlife species observed was in relatively undisturbed portions of the Habitat Study Area in areas that were mapped as alkali desert scrub, annual grassland, and valley foothill riparian communities. Special-status species like the western burrowing owl and Swainson's hawk were also observed in the vicinity of barren, urban, or agricultural areas; species like the western spadefoot toad were found breeding in seasonal, man-made wetlands, or roadside ditches.

Direct Project-Related Impacts

Direct impacts relative to all special-status wildlife species include the permanent conversion of occupied habitat to project-related infrastructure and the loss of individual special-status wildlife species within the limits of disturbance.

Invertebrates: Direct impacts would include mortality from incidental trampling or crushing caused by increased human activity in work areas and exposure to accidental spills including contaminants/pollutants. Direct impacts would also include the permanent conversion of occupied habitat to project-related infrastructure or changes to micro/local hydrology.

Amphibians and Reptiles: Train operation and maintenance activities would be limited to activities in the fenced right-of-way or to the raised structure. Security fencing would not likely prohibit or deter most reptile and amphibian species from accessing the right-of-way. Therefore, the occasional special-status amphibian and reptile species' entering the right-of-way could lead to an increased likelihood of a direct strike with the train or related maintenance activities. However, short-term disturbances associated with vibration and noise levels from the operation of the train would likely deter wildlife species from entering the right-of-way.

Direct impacts during operation would include some similar impacts on invertebrates, such as incidental trampling or crushing, exposure to accidental spills including contaminants/pollutants, changes in micro/local hydrology, and displacement from the permanent conversion of occupied habitat.

Fish: Direct impacts during operation would include exposure to contaminants/pollutants from accidental spills and increased sedimentation from erosion. Direct impacts would also include the permanent conversion of potential habitat if project-related infrastructure is installed in river channels.

Birds (includes all migratory birds covered under MBTA): Thirty-nine special-status bird species have the potential to occur in the construction footprint (Appendix 3.7-A, Attachment 2). Burrowing owls and other raptors extensively use agricultural lands, annual grasslands, valley foothill riparian (except burrowing owl), alkali desert scrub, irrigated hay field, and pasture land cover types.

Project-related impacts (e.g., mowing, weed control, and driving off-road) could result in the removal or disturbance of areas that provide potential nesting habitat for a diverse population of birds. Operations and maintenance activities conducted in areas of nesting habitat during the breeding season (generally between February 1 and September 1) could disturb nesting birds. This disturbance could cause nest abandonment and subsequent loss of eggs or developing young at active nests in or near the area of activity. Increased noise levels, mortality as a result of HST strikes, and human presence may accelerate local shifts in populations as could additional pressures on the landscape from colonization by non-native plant species.

- Burrowing Owls: Direct impacts on burrowing owls as a result of operation activities include the permanent conversion of occupied habitat and the potential for local nest/burrow abandonment. Increased noise levels and human presence may accelerate local shifts in populations and any additional pressures on the landscape from colonization by non-native plant species.
- Raptors: Direct impacts on raptors could include disruption of breeding activity from increased noise, mortality from HST strikes and human presence associated with HST operations, and the loss of habitat as a result of tree-clearing. Direct impacts on potential raptor foraging habitat include the permanent conversion of habitat as a result of site preparation activities.

Mammals: Direct impacts during operation would be primarily related to habitat conversion. In addition, increased noise levels and human presence may accelerate local shifts in populations. In addition to the loss of habitat, some free-ranging mammals may avoid the area and be funneled along the HST corridor until locating a dispersion corridor.

Indirect Project-Related Impacts

Invertebrates: Any change in local hydrology and vernal pools could cause a change in habitat conditions for vernal pool branchiopods. Indirect impacts may result from grading and stockpiling soils upslope of the pools, leading to sediment transfer into the water column. Depending on drainage best management practices (BMPs), some changes to local hydrology could cause mobilization of otherwise standing water, scour, and changes to the period of inundation of vernal pools. Chemical spills from fuel, transmission fluid, lubricating oil, and motor oil leaks could contaminate the water column, resulting in habitat degradation or reduced reproductive success of special-status vernal pool branchiopods. Valley elderberry longhorn beetles can be directly affected through the damage or removal of elderberry host plants. Removal of young elderberry shrubs would reduce the long-term habitat of the valley elderberry longhorn beetle by inhibiting recruitment of young elderberry shrubs into the canopy.

Amphibians: Impacts on amphibians would be dependent on the effectiveness of BMPs implemented in potentially affected drainages to mitigate changes to water velocity and periods of inundation in nearby habitats. Chemical spills from fuel, transmission fluid, lubricating oil, and

motor oil leaks have the potential to contaminate the water column, resulting in mortality, habitat degradation, or reduced reproductive success.

Reptiles: Indirect impacts on reptiles include changes in the local landscape from invasive species as well as aquatic and terrestrial spills of fuel, transmission fluid, lubricating oil, and motor oil leaks.

Fish: Indirect impacts on water quality would be similar to those discussed for the invertebrates. Depending on drainage BMPs, some changes to local hydrology could cause scour and changes to local hydrologic profiles. Chemical spills from fuel, transmission fluid, lubricating oil, and motor oil leaks could also contaminate water, resulting in mortality, habitat degradation, or reduced reproductive success of special-status fish.

Birds: Indirect impacts could occur from work activities that disrupt nesting birds, potentially leading to nest failure or abandonment. Indirect impacts would include avoidance behavior by some species in response to increased noise, lighting, and startle and motion disturbances during HST operation and maintenance activities.

- Burrowing Owls: Indirect impacts would be similar to those identified as common to all bird species.
- Raptors: Indirect impacts would be similar to those identified as common to all bird species.

Mammals: Indirect impacts would include any additional pressures on the landscape from the colonization of non-native plant species. The change in plant species would further reduce adjacent habitat values. Local noise and motion disturbance effects resulting from HST operation may cause some avoidance behavior.

BNSF Alternative Alignment

Project impacts associated with the BNSF Alternative would result in direct and indirect impacts on a number of special-status wildlife species and their habitat (Appendix 3.7-B, Attachment 2). These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The potential for the various special-status wildlife species to occur throughout the BNSF Alternative varies according to the species known geographic range and the presence of suitable habitat capable of supporting the species life history (Appendix 3.7-A, Attachment 2). Tables 3.7-8 and 3.7-9 list the amount of terrestrial and aquatic habitat (in acres), respectively, that would potentially be permanently affected by the HST alternative alignments.

Invertebrates: Suitable habitat for special-status invertebrate species occurs at various locations within the BNSF Alternative. Seasonal wetlands and vernal pools within the northern portion of the BNSF Alternative may provide habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp. Elderberry shrubs were identified within the BNSF Alternative in Fresno and Kings counties, primarily along the Kings River, Cole Slough, and Dutch John Slough. Elderberry shrubs may provide suitable habitat for the valley elderberry longhorn beetle, which exclusively uses this shrub as its host plant. Project impacts under the BNSF Alternative would result in a substantial effect on special-status invertebrate species and their habitats under NEPA and in a significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts on these species.

Fish: A single special-status fish species (i.e., Kern brook lamprey) may be present in a single location within the BNSF Alternative, the Friant-Kern Canal in Bakersfield. This canal has the potential to support the Kern brook lamprey; however, this canal is a dead-end habitat that lacks suitable spawning substrate for this species (Moyle 2002). At this location the BNSF Alternative

would be constructed on an elevated structure. Project impacts associated with the elevated structure could result in direct and indirect impacts to Kern brook lamprey in a limited area. While other streams within the BNSF Alternative may provide suitable habitat for Kern brook lamprey, these streams are inaccessible either because of extensive water diversions and in-stream obstructions to migratory movement or because they are outside the range of this species. Project impacts under the BNSF Alternative would result in a negligible effect on Kern brook lamprey and their habitats under NEPA and a less-than-significant impact under CEQA. These determinations are due to the potential permanent direct and indirect impacts on this species.

Amphibians: Suitable habitat for western spadefoot toad is present within the BNSF Alternative. Potential suitable breeding habitat consists of wetlands and riverine and adjacent upland habitat (e.g., annual grassland and alkali desert scrub). Impacts on this species may occur throughout the BNSF Alternative where suitable aquatic habitat is present. No impacts are anticipated to occur on California tiger salamander as a result of the BNSF Alternative. Suitable aquatic habitat for this species (e.g., seasonal wetlands and vernal pools) occurs outside the construction footprint (i.e., Corcoran Irrigation Water District). The BNSF Alternative does not overlap suitable California tiger salamander upland habitat (i.e., annual grassland, pasture, and alkali desert scrub habitats within 1.24 miles of the Corcoran Irrigation Water District). Project impacts under the BNSF Alternative would result in a substantial effect on special-status amphibian species and their habitats under NEPA and in a significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts on these species.

Reptiles: Suitable habitat for special-status reptiles is present at various locations within the BNSF Alternative. Aquatic habitats, such as riverine and lacustrine habitats, as well as natural upland areas, such as alkali desert scrub and annual grassland, are present and may support a range of special-status reptiles, including the western pond turtle, blunt-nosed leopard lizard, silvery legless lizard, San Joaquin whipsnake, and coast horned lizard. Project impacts under the BNSF Alternative would result in a substantial effect on special-status reptile species and their habitats under NEPA and in a significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts on these species.

Birds (includes all migratory birds covered under MBTA): A number of habitats and land uses known to support special-status birds and raptors occur within the BNSF Alternative. Aquatic and riparian habitats (e.g., riverine, lacustrine, valley foothill riparian) and agricultural lands may provide suitable habitat for a variety of birds and raptors. Project impacts under the BNSF Alternative would result in a substantial effect on special-status bird species and their habitats under NEPA and in a significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts on these species.

Mammals: Suitable habitat for special-status mammals is present at various locations within the BNSF Alternative. Natural habitats, such as alkali desert scrub and annual grassland, may support special-status mammals (e.g., American badger, San Joaquin kit fox, and Tipton kangaroo rat). Trees and rocky outcrops in natural habitats, such as valley foothill riparian, as well as trees and buildings in rural and urban areas, may support special-status bats. The BNSF Alternative contains suitable habitat (e.g., annual grassland and alkali desert scrub) for special-status mammals, including Tipton kangaroo rat, Dulzura pocket mouse, and the San Joaquin kit fox. Special-status mammals would potentially be permanently affected, both directly and indirectly, by operation activities. Project impacts under the BNSF Alternative would result in a substantial effect on special-status mammal species and their habitats under NEPA and in a significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts on these species.

Corcoran Elevated Alternative Alignment

Project impacts associated with the Corcoran Elevated Alternative would result in direct and indirect impacts on a number of special-status wildlife species and their habitat (Appendix 3.7-B, Attachment 2). These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The potential for the various special-status wildlife species to occur throughout the Corcoran Elevated Alternative varies according to the species' known geographic range, and the presence of suitable habitat capable of supporting the species' life history (Appendix 3.7-A, Attachment 2). Tables 3.7-8 and 3.7-9 list the amount of terrestrial and aquatic habitat (in acres), respectively, that would potentially be permanently affected by the HST alternative alignments.

Both the Corcoran Elevated Alternative and the corresponding BNSF Alternative segment are located in the urban areas of Corcoran. Both alternatives would affect small areas of habitat that could support special-status wildlife species; however, these habitats are mainly urban and agricultural lands (Table 3.7-6 and Table 3.7-7), which have a low to moderate potential of supporting these species (Appendix 3.7-A, Attachment 2). The magnitude of these impacts is similar to those of the corresponding BNSF Alternative segment. However, direct impacts on these species are substantially less in the Corcoran Elevated Alternative, compared with those of the corresponding BNSF Alternative segment, because the elevated structure would maintain habitat porosity across the alignment.

Invertebrates: The Corcoran Elevated Alternative does not contain suitable habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp. Elderberry shrubs, the sole host plant of the valley elderberry longhorn beetle, have not been identified in the Corcoran Elevated Alternative. This species could be temporarily affected if project activities occur in unsurveyed natural areas that contain elderberry shrubs. However, few natural areas are located in the Corcoran Elevated Alternative (Table 3.7-8; Table 3.7-9). This species has a low potential to occur in this alternative. Project impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and a less-than-significant impact under CEQA on special-status invertebrate species. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status invertebrate species. These determinations are due to the permanent direct and indirect impacts on these species and their habitats.

Fish: Special-status fish species are not expected to occur within the Corcoran Elevated Alternative as streams within this alternative are inaccessible either because of extensive water diversions and in-stream obstructions to migratory movement or because they are outside the range of special-status fish species. Therefore, no direct or indirect impacts on special-status fish would result from project impacts associated with this alternative. Project impacts under the Corcoran Elevated Alternative would result in no effect under NEPA and no impact under CEQA on special-status fish species. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status fish species. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on special-status fish species and their habitats.

Amphibians: The Corcoran Elevated Alternative occurs mainly in urban and agricultural lands and includes only a minor amount of upland and aquatic habitat (Table 3.7-8 and Table 3.7-9) potentially suitable for western spadefoot toad. Portions of the Corcoran Elevated Alternative in agricultural and urban land uses likely provide little value for this species. Western spadefoot toad has a low potential of being permanently affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). There are no habitats potentially

supporting California tiger salamander within the Corcoran Elevated Alternative. Project impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and a less-than-significant impact under CEQA on special-status amphibian species. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status amphibian species. These determinations are due to the potential permanent direct and indirect impacts on these species and their habitats.

Reptiles: The Corcoran Elevated Alternative occurs mainly in urban and agricultural lands and includes only a minor amount of upland and aquatic habitat (Table 3.7-8 and Table 3.7-9) potentially suitable for special-status reptile species (e.g., coast horned lizard and western pond turtle) (Appendix 3.7-A, Attachment 2). Portions of the Corcoran Elevated Alternative in agricultural and urban land uses likely provide little value for special-status reptile species. Special-status reptiles have a low potential of being permanently affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and a less-than-significant impact under CEQA on special-status reptile species. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status reptile species. These determinations are due to the potential permanent direct and indirect impacts on these species and their habitats.

Birds (includes all migratory birds covered under MBTA): The Corcoran Elevated Alternative contains suitable habitat (including both natural habitats and agricultural land uses) for a variety of special-status birds (Appendix 3.7-A, Attachment 2). Special-status birds would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Corcoran Elevated Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status bird species because of the permanent direct and indirect impacts on these species and their habitats.

Mammals: The Corcoran Elevated Alternative contains both natural lands (e.g., annual grassland) and agricultural lands that provide suitable habitat for special-status mammal species (e.g., Tipton kangaroo rat and the San Joaquin kit fox). The agricultural land uses likely provide little value for breeding or foraging special-status mammal species; however, these areas may be suitable for dispersal and foraging activities. Natural lands may provide opportunity for breeding, foraging, dispersal, and migration of the special-status mammal species. Special-status mammals would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Appendix 2). Project impacts under the Corcoran Elevated Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status mammal species because of the permanent direct and indirect impacts on these species and their habitats.

Corcoran Bypass Alternative Alignment

Project-related activities associated with the Corcoran Bypass Alternative would result in direct and indirect project impacts on a number of special-status wildlife species and their habitat (Appendix 3.7-B, Attachment 2). These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The potential for the various special-status wildlife species to occur throughout the Corcoran Bypass Alternative varies according to the species' known geographic range, and the presence of suitable habitat capable of supporting the species' life history (Appendix 3.7-A, Attachment 2). Tables 3.7-8 and

3.7-9 list the amount of terrestrial and aquatic habitat (in acres) that would potentially be permanently affected by the HST alternative alignments.

Both the Corcoran Bypass Alternative and the corresponding BNSF Alternative would run through the natural lands in the vicinity of Cross Creek and the Tulare Lakebed Mitigation Site. The corresponding BNSF Alternative would run through (in some instances) annual grasslands adjacent to SR 43 and the BNSF Railway right-of-way and through the urban areas of Corcoran, while the Corcoran Bypass Alternative would affect agricultural lands and annual grasslands that would provide higher habitat value for special-status species (Appendix 3.7-B, Attachment 2). Additionally, the Corcoran Bypass Alternative would create a new transportation alignment in these habitats, resulting in greater indirect impacts (i.e., habitat fragmentation) than those of the BNSF Alternative, which follows existing transportation alignments.

Therefore, the Corcoran Bypass Alternative would result in greater permanent direct impacts on suitable habitat for special-status wildlife species. Indirect impacts on these species are also greater in the Corcoran Bypass Alternative, compared with those of the corresponding BNSF Alternative segment, because of habitat fragmentation resulting from construction of a new transportation alignment.

Invertebrates: The Corcoran Bypass Alternative contains suitable habitat (e.g., vernal pool, and seasonal wetland) for vernal pool fairy shrimp and vernal pool tadpole shrimp. Special-status invertebrates would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Elderberry shrubs, the sole host plant of the valley elderberry longhorn beetle, have not been identified in the Corcoran Bypass. However, this species could be affected where project impacts would occur in natural areas. Project impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status invertebrate species because of the permanent direct and indirect impacts on these species and their habitats.

Fish: Special-status fish species are not expected to occur within the Corcoran Bypass Alternative, as streams within this alternative are inaccessible either because of extensive water diversions and in-stream obstructions to migratory movement or because they are outside the range of special-status fish species. Therefore, no direct or indirect impacts on special-status fish would result from project impacts associated with this alternative. Project impacts under the Corcoran Bypass Alternative would result in no effect under NEPA and no impact under CEQA on special-status fish species. However, project impacts under the Corcoran Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status fish species. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on special-status fish species and their habitats.

Amphibians: The Corcoran Bypass Alternative includes suitable upland habitat, such as annual grassland, for California tiger salamander and western spadefoot toad. Special-status amphibians would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status amphibian species because of the permanent direct and indirect impacts on these species and their habitats.

Reptiles: The Corcoran Bypass Alternative contains suitable habitat (e.g., riverine, annual grassland, and pasture) for special-status reptile species (e.g., coast horned lizard and western pond turtle) (Appendix 3.7-A, Attachment 2). Portions of the Corcoran Bypass Alternative in

agricultural land uses likely provide little value for special-status reptile species. Special-status reptiles would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status reptile species because of the permanent direct and indirect impacts on these species and their habitats.

Birds (includes all migratory birds covered under MBTA): The Corcoran Bypass Alternative contains suitable habitat (including both natural habitats and agricultural land uses) for a variety of special-status birds (Appendix 3.7-A, Attachment 2). Special-status birds would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status bird species because of the permanent direct and indirect impacts on these species and their habitats.

Mammals: The Corcoran Bypass Alternative contains both natural lands and agricultural lands that provide suitable habitat (e.g., annual grassland and barren) for special-status mammal species (e.g., Tipton kangaroo rat and the San Joaquin kit fox). The agricultural land uses likely provide little value for breeding or foraging special-status mammal species; however, these areas may be suitable for dispersal and foraging activities. Natural lands may provide opportunity for breeding, foraging, dispersal, and migration of the special-status mammal species. Special-status mammals would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status mammal species because of the permanent direct and indirect impacts on these species and their habitats.

Allensworth Bypass Alternative Alignment

Project-related activities associated with the Allensworth Bypass Alternative would result in direct and indirect impacts on a number of special-status wildlife species and their habitat. These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The amount of permanent impacts associated with the project operation is provided in Appendix 3.7-B, Attachment 2. The potential for the various special-status wildlife species to occur throughout the Allensworth Bypass Alternative varies according to the species' known geographic range, and the presence of suitable habitat capable of supporting the species' life history (Appendix 3.7-A, Attachment 2). Tables 3.7-8 and 3.7-9 list the amount of terrestrial and aquatic habitat (in acres) that would potentially be permanently affected by the HST alternative alignments. In general, the selection of the Allensworth Bypass would either increase or decrease impacts on special-status wildlife species, depending on the species-specific habitat requirements. In comparison with the amount of habitat disturbed in the Allensworth Bypass Alternative and the corresponding BNSF Alternative segment, the difference, or delta change, between the alternatives is on the same scale (Appendix 3.7-B, Attachment 2).

If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass Alternative, this would likely additionally increase permanent impacts on special-status wildlife species when compared to the corresponding segment of the BNSF Alternative.

Invertebrates: The Allensworth Bypass Alternative contains suitable habitat (e.g., vernal pools) for vernal pool fairy shrimp and vernal pool tadpole shrimp. Elderberry shrubs, the sole host plant

of the valley elderberry longhorn beetle, have not been identified in the Allensworth Bypass Alternative. However, this species could be affected where the project occurs in natural areas. Special-status invertebrates would be permanently affected, both directly and indirectly, by project operation-related activities associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status invertebrate species because of the permanent direct and indirect impacts on these species and their habitats.

Fish: Special-status fish species are not expected to occur within Allensworth Bypass Alternative, as streams within this alternative are inaccessible either because of extensive water diversions and in-stream obstructions to migratory movement or because they are outside the range of special-status fish species. Therefore, no direct or indirect project impacts on special-status fish would result from project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Allensworth Bypass Alternative would result in no effect under NEPA and no impact under CEQA on special-status fish species. However, project impacts under the Allensworth Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status fish species. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on special-status fish species and their habitats.

Amphibians: The Allensworth Bypass Alternative contains suitable habitat (e.g., vernal pools, annual grassland, and alkali desert scrub) for western spadefoot toad. Portions of the Allensworth Bypass Alternative in agricultural land uses provide little value or habitat for special-status amphibian species. Special-status amphibians would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status amphibian species because of the permanent direct and indirect impacts on these species and their habitats.

Reptiles: The Allensworth Bypass Alternative contains suitable habitat (e.g., annual grassland and alkali desert scrub) for special-status reptiles, including blunt-nosed leopard lizard and coast horned lizard. Portions of the Allensworth Bypass Alternative in agricultural land uses provide little value or habitat for special-status reptile species. Special-status reptiles would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status reptile species because of the permanent direct and indirect impacts on these species and their habitats.

Birds (includes all migratory birds covered under MBTA): The Allensworth Bypass Alternative contains suitable habitat (e.g., annual grassland, alkali desert scrub, and agricultural land uses) for migratory birds and special-status birds, including western burrowing owl and sandhill crane (Appendix 3.7-A, Attachment 2). Special-status birds would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status bird species because of the permanent direct and indirect impacts on these species and their habitats.

Mammals: The Allensworth Bypass Alternative contains suitable habitat (e.g., annual grassland and alkali desert scrub) for special-status mammals, including San Joaquin kit fox, American badger, and Tipton kangaroo rat. The agricultural land uses likely provide little value for breeding or foraging special-status mammal species. However, these areas may be suitable for dispersal and foraging activities. Natural lands may provide opportunity for breeding, foraging, dispersal, and migration of the special-status mammal species. Special-status mammals would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status mammal species because of the permanent direct and indirect impacts on these species and their habitats.

Wasco-Shafter Bypass Alternative Alignment

Project-related activities associated with the Wasco-Shafter Bypass Alternative would result in direct and indirect impacts on a number of special-status species. These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The amount of permanent impacts associated with project operation is provided in Appendix 3.7-B, Attachment 2. The potential for the various special-status wildlife species to occur throughout the Wasco-Shafter Bypass Alternative varies according to the species' known geographic range, and the presence of suitable habitat capable of supporting the species' life history (Appendix 3.7-A, Attachment 2). Tables 3.7-8 and 3.7-9 list the amount of terrestrial and aquatic habitat (in acres) that would potentially be permanently affected by the HST alternative alignments.

In terms of calculated impacts, selection of the Wasco-Shafter Alternative would have similar impacts on natural habitats when compared to the corresponding segment of the BNSF Alternative (Table 3.7-8; Table 3.7-9; Appendix 3.7-B, Attachment 2). Selection of the Wasco-Shafter Alternative would have greater impacts on agricultural lands (fewer on urban areas) when compared to the corresponding segment of the BNSF Alternative (Table 3.7-8; Table 3.7-9; Appendix 3.7-B, Attachment 2). Depending on the species-specific habitat requirements, the selection of the Wasco-Shafter Bypass would either increase or decrease impacts on special-status wildlife species.

Invertebrates: The Wasco-Shafter Bypass Alternative does not contain suitable habitat (e.g., vernal pools) for vernal pool fairy shrimp and vernal pool tadpole shrimp. Elderberry shrubs, the sole host plant of the valley elderberry longhorn beetle, have not been identified in the Wasco-Shafter Bypass Alternative. However, this species could be affected where project impacts occur in natural areas associated with Poso Creek. Special-status invertebrates would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status invertebrate species because of the permanent direct and indirect impacts on these species and their habitats.

Fish: Special-status fish species are not expected to occur within the Wasco-Shafter Bypass Alternative, as streams within this alternative are inaccessible either because of extensive water diversions and in-stream obstructions to migratory movement or because they are outside the range of special-status fish species. Therefore, no direct or indirect impacts on special-status fish would result from project impacts associated with this alternative. Project impacts under the Wasco-Shafter Bypass Alternative would result in no effect under NEPA and no impact under CEQA on special-status fish species. However, project impacts under the Wasco-Shafter Bypass

Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status fish species. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on special-status fish species and their habitats.

Amphibians: The Wasco-Shafter Bypass Alternative contains limited suitable habitat (e.g., riverine) for special-status amphibian species (Appendix 3.7-A, Attachment 2). Special-status amphibians would be permanently affected, both directly and indirectly by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). The impacts of project impacts under the Wasco-Shafter Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status amphibian species and their habitats.

Reptiles: The Wasco-Shafter Bypass Alternative contains fragmented habitat (e.g., riverine, lacustrine, annual grassland) for special-status reptiles, including blunt-nosed leopard lizard, and western pond turtle. Because suitable habitats in the Wasco-Shafter Bypass Alternative are small and fragmented, the potential for special-status reptiles to occur may be limited (Appendix 3.7-A, Attachment A). Special-status reptiles would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status reptile species because of the permanent direct and indirect impacts on these species and their habitats.

Birds (includes all migratory birds covered under MBTA): The Wasco-Shafter Bypass Alternative contains suitable habitat (including both natural habitats and agricultural land uses) for special-status birds along much of its length. Special-status birds would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status bird species because of the permanent direct and indirect impacts on these species and their habitats.

Mammals: The Wasco-Shafter Bypass Alternative contains suitable habitat (e.g., annual grassland) for special-status mammals (Appendix 3.7-A, Attachment 2). The agricultural land uses likely provide little value for breeding or foraging special-status mammal species. However, these areas may be suitable for dispersal and foraging activities. Special-status mammals would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status mammal species because of the permanent direct and indirect impacts on these species and their habitats.

Bakersfield South Alternative Alignment

Project-related activities associated with the Bakersfield South Alternative would result in direct and indirect impacts on a number of special-status wildlife species and their habitat (Appendix 3.7-B, Attachment 2). These impacts would occur through the same mechanisms as discussed above under direct and indirect impacts on special-status wildlife species. The potential for the various special-status wildlife species to occur throughout the Bakersfield South Alternative varies according to the species known geographic range and the presence of suitable habitat capable of supporting the species' life history (Appendix 3.7-A, Attachment 2). Tables 3.7-8 and 3.7-9 list

the amount of terrestrial and aquatic habitat (in acres) that would potentially be permanently affected by the HST alternative alignments.

Both the Bakersfield South Alternative and the corresponding BNSF Alternative segment are located in a highly urbanized portion of metropolitan Bakersfield. Both alternatives would affect small areas of habitat that could support special-status wildlife species; the magnitude of these impacts is similar.

Invertebrates: The Bakersfield South Alternative does not contain suitable habitat (e.g., vernal pools) for vernal pool fairy shrimp and vernal pool tadpole shrimp. Elderberry shrubs, the sole host plant of the valley elderberry longhorn beetle, have not been identified in the Bakersfield South Alternative. However, this species could be affected where project impacts occur in natural areas and in association with the Kern River. Special-status invertebrates would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-2, Appendix B). Project impacts under the Bakersfield South Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status invertebrate species because of the permanent direct and indirect impacts on these species and their habitats.

Fish: Within the Bakersfield South Alternative, a small amount of marginal habitat (i.e., riverine) for the Kern brook lamprey is present in the Friant-Kern Canal. The Bakersfield South Alternative is not expected to result in long-term permanent impacts on special-status fish because it would be operated on an elevated structure. Kern brook lamprey has a low potential to be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on special-status fish species because of the potential permanent direct and indirect impacts on this species and its habitats.

Amphibians: The Bakersfield South Alternative contains limited suitable habitat (e.g., riverine, alkali desert scrub, and annual grassland) that may support western spadefoot toads (Appendix 3.7-A, Attachment 2). Because suitable habitats in the Bakersfield South Alternative are small and fragmented, the potential for special-status amphibians to occur may be limited (Appendix 3.7-A, Attachment 2). Special-status amphibians would be permanently affected, both directly and indirectly, by construction of this alternative (Appendix 3.7-B, Attachment 2). Special-status amphibian would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Bakersfield South Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status amphibian species because of the permanent direct and indirect impacts on these species and their habitats.

Reptiles: The Bakersfield South Alternative contains suitable habitat (e.g., annual grassland and alkali desert scrub) for special-status reptiles, including coast horned lizard. Because suitable habitats in the Bakersfield South Alternative are small and fragmented, the potential for special-status reptiles to occur may be limited (Appendix 3.7-A, Attachment 2). Special-status reptiles would be permanently affected, both directly and indirectly, by project impacts associated with this alternative. Project impacts under the Bakersfield South Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status reptile species because of the permanent direct and indirect impacts on these species and their habitats.

Birds (includes all migratory birds covered under MBTA): The Bakersfield South Alternative contains suitable habitat (including both natural habitats and agricultural land uses) for a variety of special-status birds, including burrowing owl. The natural areas provide suitable habitat for breeding, foraging, and migration stopover habitat. Special-status bird species and their habitat would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Bakersfield South Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status bird species because of the permanent direct and indirect impacts on these species and their habitats.

Mammals: The Bakersfield South Alternative contains suitable habitat (e.g., annual grasslands, valley foothill riparian, barren), for special-status mammals, including San Joaquin kit fox and special-status bats. In addition, urban land uses in Bakersfield are used by San Joaquin kit fox. Special-status mammals would be permanently affected, both directly and indirectly, by project impacts associated with this alternative (Appendix 3.7-B, Attachment 2). Project impacts under the Bakersfield South Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status mammal species because of the permanent direct and indirect impacts on these species and their habitats.

Heavy Maintenance Facility Alternatives

Tables 3.7-10 and 3.7-11 list the amount of terrestrial and aquatic habitat (in acres) that would potentially be permanently affected by the heavy maintenance facility alternatives.

Table 3.7-12 lists special-status wildlife species potentially affected by the HMF alternatives and the potential for project-related impacts on the species.

Table 3.7-12
Special-Status Wildlife Species Potentially Affected by the
HMF Alternatives during Project Operation

HMF Alternatives	Vernal Pool Branchiopods	Valley Elder-berry Longhorn Beetle	Fish	Amphibians	Reptiles	Birds*	Mammals	Bats
Fresno Works-Fresno	Moderate Effect/ Significant Impact	No Effect/ No Impact	No Effect/ No Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact
Kings County – Hanford	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact
KCOG–Wasco	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	Negligible Effect/Less than Significant	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact
KCOG–Shafter East	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	Negligible Effect/Less than Significant	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact
KCOG–Shafter West	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	Negligible Effect/Less than Significant	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact
NEPA/CEQA Significance Conclusion: No Effect/No Impact Negligible Effect/Less than Significant Moderate Effect/Significant Impact Substantial Effect/Significant Impact *includes all migratory birds covered under MBTA Acronym: KCOG Kern Council of Governments								

Station Alternatives

Table 3.7-13 lists the amount of terrestrial (in acres) that would potentially be permanently affected by the HST station alternatives. The HST station alternatives would not permanently affect any aquatic habitat (i.e., seasonal wetlands and vernal pools, fresh emergent wetland, riverine, and lacustrine.)

Table 3.7-13

Terrestrial Communities Potentially Affected by the Station Alternatives (acres): Project Operation (Permanent Impacts)

Station Alternatives	Developed Areas		Agricultural Lands	Annual Grassland	Valley Foothill Riparian	Alkali Desert Scrub	Pasture
	Barren	Urban					
Impact Acreage							
Fresno Station–Mariposa	0.15	17.23	—	0.40	—	—	—
Fresno Station–Kern	1.95	16.03	—	—	—	—	—
Kings/Tulare Regional Station	—	—	21.87	—	—	—	—
Bakersfield Station – North	—	21.14	—	—	—	—	—
Bakersfield Station–South	—	23.86	—	—	—	—	—
Notes: — = No impact or not applicable All impacts were calculated based on 15% engineering design construction footprint.							

Table 3.7-14 lists special-status wildlife species potentially affected by the HST station alternatives and the potential for project-related impacts on the species.

Table 3.7-14

Special-Status Wildlife Species Potentially Affected by the Station Alternatives during Project Operation (Permanent Impacts)

Station Alternatives	Vernal Pool Branchiopods	Valley Elderberry Longhorn Beetle	Fish	Amphibians	Reptiles	Birds*	Mammals	Bats
Fresno Station–Mariposa Alternative	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	Negligible Effect/Less than Significant	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact	Moderate Effect/ Significant Impact
Fresno Station–Kern Alternative	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	Negligible Effect/Less than Significant	Negligible Effect/Less than Significant	Negligible Effect/Less than Significant	Negligible Effect/Less than Significant
Kings/Tulare Regional Station	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	Negligible Effect/Less than Significant	Moderate Effect/ Significant Impact	Negligible Effect/Less than Significant	Negligible Effect/Less than Significant

Table 3.7-14
Special-Status Wildlife Species Potentially Affected by the
Station Alternatives during Project Operation (Permanent Impacts)

Station Alternatives	Vernal Pool Branchiopods	Valley Elder-berry Longhorn Beetle	Fish	Amphibians	Reptiles	Birds*	Mammals	Bats
Bakersfield Station-North	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	Negligible Effect/Less than Significant	Negligible Effect/Less than Significant	Negligible Effect/Less than Significant	Negligible Effect/Less than Significant
Bakersfield Station-South	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	No Effect/ No Impact	Negligible Effect/Less than Significant	Negligible Effect/Less than Significant	Negligible Effect/Less than Significant	Negligible Effect/Less than Significant
NEPA/CEQA Significance Conclusion: No Effect/No Impact Negligible Effect/Less than Significant Moderate Effect/Significant Impact Substantial Effect/Significant Impact *includes all migratory birds covered under MBTA								

Habitats of Concern

This section evaluates direct and indirect project-related impacts on habitats of concern (i.e., special-status plant communities, jurisdictional waters, critical habitat, conservation areas, and protected trees) that would result from project impacts associated with the HST alternatives. Appendix 3.7-B, Attachments 3 through 6, provide a comparison of impacts on habitats of concern by alternative.

The amount of habitat permanently converted during project-related activities varies among the HST alternatives. Where habitats of concern are present, the HST alternatives will result in either a negligible, moderate, or substantial effect depending on the quantity of the regulated habitat (e.g., jurisdictional waters, conservation areas).

Direct Project-Related Impacts

Direct impacts include the permanent conversion of special-status plant communities, jurisdictional waters, critical habitat, conservation areas, and conservation trees. Direct project impacts on habitats of concern would result from the operation period including the construction of the various permanent project components (e.g., embankments, rail bed, road overcrossings, and aerial structure footings).

Impacts on special-status plant communities would include the permanent removal of vegetation from within the construction footprint, and the disturbance (i.e., trampling or crushing) of plants due to an increase of pedestrian access/activity in the area. Ongoing operation and maintenance activities would also occur (e.g., routine inspection and maintenance of the HST right-of-way) and would similarly involve disturbance from trampling or crushing of native vegetation by vehicle or foot traffic.

Project impacts would require the use of heavy machinery to recontour the landscape and place permanent fill materials (such as culverts, dirt, and/or engineering structures) in both man-made

special jurisdictional waters (basins, canals, and ditches) and natural features (wetlands, river beds, and riparian corridors). The contouring and placement of fill in jurisdictional waters would result in the permanent loss of this resource.

Direct impacts on jurisdictional waters (i.e., natural and man-made features) would also include the removal or modification of local hydrology and the redirection of flow within jurisdictional waters. In the case of man-made features, these impacts would remove or disrupt the limited biological functions that these features provide. In natural areas, these activities would remove or disrupt the hydrology, vegetation, wildlife use, water quality conditions, and other biological functions provided by the resources.

Permanent impacts on jurisdictional waters would occur during construction of bridges and viaducts over biological resources such as rivers or creeks (e.g., Kings River, Dutch John Cut, Cole Slough, Cross Creek, Tule River, Deer Creek, and Kern River) and wetlands, as well as man-made ditches and basins. Permanent impacts would result from the shading of jurisdictional waters by elevated structures (where the aerial structure is near the ground), from the placement of piles to support the aerial structures and bridges, and from the permanent removal of vegetation.

Many of the jurisdictional waters (canal, ditches, and seasonal riverine) are heavily managed by local irrigation districts, which serve public water needs, and agricultural production. As a result, these jurisdictional waters support few natural biological functions and values. The biological functions of these man-made features include limited habitat for wildlife, and capacity for water storage and/or release. A number of these jurisdictional waters have been previously degraded or affected by various existing roads and BNSF infrastructure. The construction of the HST alternatives would eliminate or further degrade these man-made jurisdictional waters.

Direct impacts on critical habitat include ground-disturbing activities within designated or proposed critical habitat for federally listed species. As a result, critical habitat potentially occupied by federally listed species could be permanently removed.

Project-related direct impacts on federal recovery plan areas include the creation of permanent partial or total movement barriers to special-status species.

Project activities could directly affect biological resources associated within the Allensworth ER as described in Section 3.7.5 (Construction Period Impacts, Special-Status Wildlife Species), 3.7.5 (Construction Period Impacts, Special-Status Plant Species), and Section 3.7.5 (Construction Period Impacts, Habitats of Concern, Jurisdictional Waters). However, because of the proximity to existing linear features (e.g., BNSF and SR 43), biological resources are likely to be only indirectly affected for the most part.

Project-related activities would interfere with, disturb, or conflict with the objectives, goals, and/or provisions and targeted conservation areas identified in HCPs; NCCP; or other approved local, regional, or state conservation plans, and areas of conservation (e.g., *Metropolitan Bakersfield Habitat Conservation Plan* [City of Bakersfield and Kern County 1994]). These impacts would occur through the loss or degradation of special-status plant and wildlife species and lands that could support or provide habitat for these species. In addition, the conservation plans identify areas that should be targeted for long-term conservation or recovery of special-status species. Therefore, impacts on the identified areas would result in conflicts with the overall objectives, goals, or provisions of the various plans.

Construction of the HST project would result in the permanent removal or modification of trees within the construction footprint. Where the alignment is located at-grade, removal or trimming of all protected trees is anticipated. In urban areas where the majority of the landscaped

ornamental trees are located and where the alignment is on an elevated structure, trimming and limited removal of protected trees would occur.

Indirect Project-Related Impacts

Indirect impacts would include contamination of habitats of concern outside the construction footprint from increased erosion, sedimentation, siltation, and runoff due to alterations in topography and hydrology; wind erosion effects (including from unvegetated rights-of-way and passing high-speed trains); an increased risk of fire in adjacent open spaces due to increased human activity; and the introduction of noxious plant species from increased human activity/disturbance.

Permanent indirect project-related impacts on sensitive biological communities would include fragmentation and introduction of non-native, invasive plant species. These changes would result in decreased viability and gradual loss of sensitive biological communities. Fragmentation would result from the construction of permanent features, especially linear features, including track that bisects sensitive biological communities. Project activities could facilitate the spread of non-native invasive plant species through introduction of seeds by construction equipment, vehicles, and personnel, and could provide ample habitat for colonization where permanent ground-disturbing activities occurred.

Potential indirect impacts on jurisdictional waters include a number of water-quality-related impacts: erosion, siltation, and runoff into natural and constructed water features and fill downstream of the construction footprint. These discharges would indirectly adversely affect adjacent or downstream jurisdictional waters.

Indirect project-related impacts on critical habitat include erosion, siltation, and runoff into nearby designated or proposed critical habitat for federally listed species. As a result, critical habitat potentially occupied by federally listed species could be permanently degraded.

Project-related indirect impacts on federal recovery plan areas include fragmentation of satellite areas and linkages where recovery areas are crossed by permanent construction activities and disturbance of natural lands within recovery areas, which reduces habitat value for species recovery.

Project-related indirect impacts on Allensworth ER would be similar to those described in Section 3.7.5 (Project Impacts, Special-Status Wildlife Species), 3.7.5 (Project Impacts, Special-Status Plant Species), and Section 3.7.5 (Project Impacts, Habitats of Concern, and Jurisdictional Waters).

Project activities could interfere with, disturb, or conflict with the objectives, goals, and/or provisions and targeted conservation areas identified in HCPs, NCCPs, or other approved local, regional, or state conservation plans, and areas of conservation (e.g., *Metropolitan Bakersfield Habitat Conservation Plan* [City of Bakersfield and Kern County 1994]). Indirect impacts would include erosion, siltation, and runoff into nearby lands that could support or provide habitat for special-status plant and wildlife species. Therefore, impacts on the identified areas would result in conflicts with the overall objectives, goals, or provisions of the various plans.

BNSF Alternative Alignment

Special-Status Plant Communities

Eight special-status plant communities would be affected by this alternative: iodine bush scrub, alkali goldenbush scrub, bush seepweed scrub, saltgrass flats, Fremont cottonwood forest, black willow thickets, red willow thickets, and unsurveyed habitats that have the potential to support

special-status plant communities (including valley foothill riparian areas) (Appendix 3.7-B, Attachment 3). In addition to the special-status plant communities that have been observed, a number of special-status plant communities have the potential to occur in natural areas where permission to enter was not available. Direct and indirect project impacts would occur during project activities associated with the BNSF Alternative and result in the permanent disturbance of these special-status plant communities (Appendix 3.7-B, Attachment 3). Impacts on special-status plant communities would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Project impacts under the BNSF Alternative would result in a substantial effect under NEPA on special-status plant communities. The impact would be significant under CEQA. These determinations are due to the permanent direct and indirect impacts on these communities.

Jurisdictional Waters

Wetlands and other waters, including seasonal wetlands, vernal pools, canals, culverts, agricultural ditches, reservoirs, retention/detention basins, and riverine features, are present throughout the BNSF Alternative. Direct and indirect impacts would occur during construction of the BNSF Alternative, resulting in the permanent disturbance of jurisdictional waters (Appendix 3.7-B, Attachment 4). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Project impacts under the BNSF Alternative would result in a substantial effect under NEPA due to impacts on jurisdictional waters. The impact would be significant under CEQA. These determinations are due to the permanent direct and indirect impacts on these jurisdictional waters.

Critical Habitat

The BNSF Alternative overlaps designated critical habitat for vernal pool tadpole shrimp. The construction footprint overlaps approximately less than 0.01 acre of Critical Habitat Unit 27B, where this unit crosses SR 43 and the BNSF Railway right-of-way. Critical Habitat Unit 27B within the construction footprint is composed of ruderal and annual grassland habitat that does not support PCEs (vernal pools, swales, and other ephemeral wetlands and depressions). The construction footprint does not overlap Critical Habitat Unit 27C but is within 250 feet; however, the unit is on the far side of SR 43 and the portion of the unit within 250 of the construction footprint does not support the PCEs for vernal pool fairy shrimp. No direct or indirect impacts on designated vernal pool fairy shrimp critical habitat with suitable required habitat characteristics (i.e., PCEs) are expected as a result of project activities. Furthermore, no permanent impacts would occur on designated critical habitat for the vernal pool fairy shrimp.

Project impacts under the BNSF Alternative would have no effect on critical habitat under NEPA and no impact under CEQA. These determinations are due to the permanent direct and indirect impacts on this habitat.

Conservation Areas

Recovery Plans

The BNSF Alternative overlaps two recovery plans: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998) and *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). The BNSF Alternative overlaps the San Joaquin Valley Vernal Pool Region identified in the *Recovery Plan for Vernal Pool Ecosystems in California and Southern Oregon* (USFWS 2005), where the recovery plan crosses SR 43 and the BNSF Railway right-of-way. Project impacts associated with the BNSF Alternative would not result in a

small amount of permanent disturbance to the recovery plan area (Appendix 3.7-B, Attachment 5).

The BNSF Alternative overlaps the planning area of the *Recovery Plan for Upland Species of the San Joaquin Valley, California*. A portion of the BNSF Alternative occurs in satellite and linkage areas identified in the recovery plan. Project activities associated with the BNSF Alternative would result in permanent impacts on the recovery plan areas identified in the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Project impacts under the BNSF Alternative would result in a substantial effect on recovery plans under NEPA and in a significant impact under CEQA.

Allensworth Ecological Reserve

The BNSF Alternative in southern Tulare County would overlap the eastern boundary of the Allensworth ER. Project activities associated with the BNSF Alternative would result in permanent disturbance to the Allensworth ER (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Project impacts on the BNSF Alternative would result in a substantial effect on the Allensworth ER under NEPA and in a significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts associated on the Allensworth ER.

Habitat Conservation Plans

The BNSF Alternative overlaps with two habitat conservation plans: the MBHCP and the draft VFHCP. Project activities on the BNSF Alternative would result in permanent impacts on the habitat conservation plan areas (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The portion of the BNSF Alternative located in Kern County occurs in the high- and low- priority conservation areas identified of the draft VFHCP. However, because the draft VFHCP has not been approved or adopted, the project is not currently required to comply with the provisions of the plan; therefore, the project does not conflict with the provisions of the draft VFHCP.

Project impacts under the BNSF Alternative would result in a negligible effect on habitat conservation plans under NEPA and in a less-than-significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts on these plans.

Protected Trees

Trees, including those regulated by various local government regulations, are present along the BNSF Alternative (Appendix 3.7-B, Attachment 6), and project impacts would both alter and remove some portion of these resources. The majority of trees are located in Fresno, and almost all of the native oaks are in the vicinity of the Kings River. Direct and indirect project-related impacts would occur in association with the BNSF Alternative, resulting in the permanent disturbance of these protected trees. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The anticipated removal and trimming of protected trees (both native and landscape ornamentals) as part of construction of permanent project impacts in all four counties of the Fresno to Bakersfield Section would be in conflict with the city and county ordinances. Therefore,

project impacts under the BNSF Alternative would result in a substantial effect on protected trees under NEPA and in a significant impact under CEQA.

Corcoran Elevated Alternative Alignment

Special-Status Plant Communities

There are no known occurrences of special-status plant communities within the Corcoran Elevated Alternative (or its corresponding segment of the BNSF Alternative), but habitats that have the potential to support special-status plant communities are present (Appendix 3.7-A, Attachment 3). These habitats are mainly in urban and agricultural lands (Table 3.7-8 and Table 3.7-9) which have no to low potential of supporting special-status plant communities.

Project impacts on special-status plant communities and unsurveyed habitats that have a low potential to support special-status plant communities would be slightly lower under the Corcoran Elevated Alternative when compared with the corresponding BNSF Alternative (Appendix 3.7-B, Attachment 3). If special-status plant communities are present in these habitats, project impacts under the Corcoran Elevated Alternative could directly and indirectly result in permanent impacts on these species. The mechanisms for direct and indirect impacts are discussed above under the direct and indirect impacts for special-status plant communities.

Project impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and a less-than-significant impact under CEQA on special-status plant communities. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status plant communities. These determinations are due to the potential permanent direct and indirect impacts on these communities and their habitats.

Jurisdictional Waters

Wetlands and other waters present in the Corcoran Elevated Alternative contain culverts, agricultural canals, ditches, and retention/detention basins (Appendix 3.7-B, Attachment 4). No natural jurisdictional waters (e.g., seasonal wetlands, vernal pools, riparian, and seasonal riverine) would be permanently affected by the use of this alternative (Appendix 3.7-B, Attachment 4). Direct and indirect project-related impacts would occur under the Corcoran Elevated Alternative, resulting in the permanent disturbance of artificial jurisdictional waters (Appendix 3.7-B, Attachment 4). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Corcoran Elevated Alternative would be located in agricultural areas east of Corcoran, whereas the corresponding BNSF Alternative segment would be routed through Corcoran, along SR 43 and the BNSF Railway right-of-way. The Corcoran Elevated Alternative would have slightly fewer permanent impacts to jurisdictional waters when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 4).

Project impacts under the Corcoran Elevated Alternative would result in a negligible effect under NEPA and a less-than-significant impact under CEQA on jurisdictional waters. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on jurisdictional waters. These determinations are due to the permanent direct and indirect impacts on these jurisdictional waters.

Critical Habitat

Critical habitat does not occur within the footprint of the Corcoran Elevated Alternative. Project impacts under this alternative would result in no effect under NEPA and no impact under CEQA on critical habitat. However, project impacts under the Corcoran Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect on critical habitat under NEPA and in a less-than-significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on critical habitat.

Conservation Areas

Recovery Plans

The Corcoran Elevated Alternative overlaps one of the recovery plan areas that occur in the region: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). A portion of the Corcoran Elevated Alternative occurs in a satellite area identified in this recovery plan area (Appendix 3.7-B, Attachment 5). Permanent direct or indirect impacts would occur on the recovery plan area as a result of construction of this alternative (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern. The Corcoran Elevated Alternative and the corresponding segment in the BNSF Alternative both overlap the recovery plan area for the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). Selection of the Corcoran Elevated Alternative would slightly decrease the amount of permanent disturbance to the recovery plan area when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Corcoran Elevated Alternative nor the corresponding BNSF Alternative segment overlaps the recovery plan area of the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). Therefore, no permanent direct or indirect project impacts on this recovery plan would occur as a result of operation of either of these alternatives.

Project impacts under the Corcoran Elevated Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on recovery plans because of the permanent direct and indirect impacts on these plans.

Allensworth Ecological Reserve

Neither the Corcoran Elevated Alternative nor its corresponding segment in the BNSF Alternative overlaps the Allensworth ER (Appendix 3.7-B, Attachment 5). Therefore, no permanent direct or indirect impacts on the Allensworth ER would occur as a result of project activities associated with either of these alternatives.

Project impacts under the Corcoran Elevated Alternative would result in no effect under NEPA and no impact under CEQA on Allensworth ER. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant species and their habitats. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on the Allensworth ER.

Habitat Conservation Plans

Neither the Corcoran Elevated Alternative nor its corresponding segment in the BNSF Alternative overlaps the plan areas of the two habitat conservation plans identified in the vicinity: the MBHCP and the draft VFHCP (Appendix 3.7-B, Attachment 5). Therefore, no permanent direct or indirect

impacts on these habitat conservation plan areas would occur as a result of project impacts under either of these alternatives.

Project impacts under the Corcoran Elevated Alternative would result in no effect under NEPA and no impact under CEQA on habitat conservation plans. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on habitat conservation plans. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on these plans.

Protected Trees

No protected trees were mapped in the Corcoran Elevated Alternative and one unknown tree species was mapped in the corresponding segment of the BNSF Alternative. Construction of the Corcoran Elevated Alternative would result in a negligible decrease in the number of trees disturbed when compared to the construction of the corresponding segment in the BNSF Alternative (Appendix 3.7-B, Attachment 6).

Project impacts on protected trees under the Corcoran Elevated Alternative would result in no effect under NEPA and no impact under CEQA. However, construction of the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on protected trees because of the permanent direct and indirect impacts associated with the BNSF Alternative.

Corcoran Bypass Alternative Alignment

Special-Status Plant Communities

Field surveys identified three special-status plant communities in the Corcoran Bypass Alternative: saltgrass flats, black willow thickets, and valley foothill riparian habitat located along the Tule River (Appendix 3.7-B, Attachment 3; Table 3.7-6). Additional unsurveyed habitats that have the potential to support special-status plant communities, including annual grasslands, could also support special-status plant communities. Permanent impacts would occur in identified special-status plant communities (i.e., valley foothill riparian) in the Corcoran Bypass Alternative. Permanent impacts would also occur in unsurveyed habitats that have the potential to support special-status plant communities that may support special-status plant communities. Impacts on special-status plant communities, if present, would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern. The Corcoran Bypass Alternative would result in slightly more permanent impacts on valley foothill riparian than its corresponding BNSF Alternative (Table 3.7-6). The Corcoran Bypass Alternative would result in slightly less permanent impacts than its corresponding segment of the BNSF Alternative on unsurveyed habitats that have the potential to support special-status plant communities (Appendix 3.7-B, Attachment 3).

Project impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status plant communities and their habitats because of the permanent direct and indirect impacts on these communities.

Jurisdictional Waters

Wetlands and other waters present in the Corcoran Bypass Alternative include seasonal wetlands, vernal pools, canals, culverts, ditches, retention/detention basins, and seasonal riverine (e.g., Cross Creek, Tule River) (Appendix 3.7-B, Attachment 4). Direct and indirect impacts would occur during construction of the Corcoran Bypass Alternative, resulting in the permanent disturbance of

these jurisdictional waters. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Corcoran Bypass Alternative would be located in agricultural areas east of Corcoran, whereas the corresponding BNSF Alternative segment would be routed through Corcoran, along SR 43 and the BNSF Railway right-of-way. The Corcoran Bypass Alternative would have slightly fewer permanent impacts on wetlands when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 4). However, overall, the Corcoran Bypass Alternative would have substantially fewer permanent impacts to jurisdictional waters when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 4).

Project impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on jurisdictional waters because of the permanent direct and indirect impacts on these waters.

Critical Habitat

Critical habitat does not occur within the footprint of the Corcoran Bypass Alternative. Project impacts under this alternative would result in no effect under NEPA and no impact under CEQA on critical habitat. However, project impacts under the Corcoran Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect on critical habitat under NEPA and a less-than-significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on critical habitat.

Conservation Areas

Recovery Plans

The Corcoran Bypass Alternative overlaps one of the recovery plan areas that occur in the region: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). A portion of the Corcoran Bypass Alternative occurs in a satellite area identified in this recovery plan area. Project activities on the Corcoran Bypass Alternative would result in permanent disturbance of this recovery plan area (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Corcoran Bypass Alternative and the corresponding segment in the BNSF Alternative both overlap the recovery plan area for the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). Selection of the Corcoran Bypass Alternative would greatly decrease the amount of permanent disturbance to the recovery plan area when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Corcoran Bypass Alternative nor the corresponding BNSF Alternative segment overlaps the recovery plan area of the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). Therefore, no permanent direct or indirect impacts on this recovery plan area would occur as a result of project impacts associated with either of these alternatives.

Project impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on recovery plans because of the permanent direct and indirect impacts on these plans.

Allensworth Ecological Reserve

Neither the Corcoran Bypass Alternative nor its corresponding segment in the BNSF Alternative overlaps the Allensworth ER (Appendix 3.7-B, Attachment 5). Therefore, no permanent direct or indirect project impacts on the Allensworth ER would occur as a result of project impacts associated with either of these alternatives.

Project impacts under the Corcoran Bypass Alternative would result in no effect under NEPA and no impact under CEQA on Allensworth ER. However, project impacts under the Corcoran Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant species and their habitats. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on the Allensworth ER Habitat Conservation Plans.

Neither the Corcoran Bypass Alternative nor its corresponding segment in the BNSF Alternative overlaps the plan areas of the two habitat conservation plans identified in the vicinity: the MBHCP and the draft VFHCP (Appendix 3.7-B, Attachment 5). Therefore, no permanent direct or indirect impacts on these habitat conservation plan areas would occur as a result of project impacts associated with either of these alternatives.

Project impacts under the Corcoran Bypass Alternative would result in no effect under NEPA and no impact under CEQA on habitat conservation plans. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on habitat conservation plans. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on these plans.

Protected Trees

Trees that may be regulated under the Kings County General Plan and/or the Corcoran City Code are present in the Corcoran Bypass Alternative and in the corresponding segment of the BNSF Alternatives. Direct and indirect project impacts would occur in association with the Corcoran Bypass Alternative, resulting in the disturbance of protected trees. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Construction of the Corcoran Bypass Alternative would result in an increase of the number of unknown trees disturbed when compared to the construction of the corresponding segment in the BNSF Alternative (Appendix 3.7-B, Attachment 6).

Project impacts on protected trees under the Corcoran Bypass Alternative would result in negligible effect under NEPA and less-than-significant impact under CEQA. However, construction of the Corcoran Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on protected trees because of the permanent direct and indirect impacts associated with the BNSF Alternative.

Allensworth Bypass Alternative Alignment***Special-Status Plant Communities***

During the field surveys, five special-status plant communities were identified in the Allensworth Bypass Alternative: saltgrass flats, bush seepweed scrub, iodine bush scrub, black willow thickets, and valley foothill riparian (Appendix 3.7-B, Attachment 3; Table 3.7-6). Special-status plant communities could also be present in unsurveyed habitats that have the potential to support special-status plant communities (e.g., annual grasslands, riverine, and fragmented natural

areas). Permanent impacts would occur in identified special-status plant communities (i.e., valley foothill riparian) in the Allensworth Bypass Alternative. Temporary impacts would also occur in unsurveyed habitats that have the potential to support special-status plant communities that may support special-status plant communities. Impacts on special-status plant communities, if present, would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Allensworth Bypass Alternative would result in slightly more permanent impacts on valley foothill riparian than its corresponding BNSF Alternative (Table 3.7-6). The Allensworth Bypass Alternative would result substantially more permanent impacts on unsurveyed habitats that have the potential to support special-status plant species than the corresponding BNSF Alternative (Appendix 3.7-B, Attachment 3).

Project impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status plant communities and their habitats because of the permanent direct and indirect impacts on these communities.

Jurisdictional Waters

Surveys for vernal pools were used to inform routing of the Allensworth Bypass to minimize impacts on wetlands and other waters (a reduction of more than 100 acres in the Wetland Study Area). Even after minimization of impacts, the Allensworth Bypass Alternative would permanently affect seasonal wetlands, vernal pools, seasonal riverine (e.g., Deer Creek, Poso Creek), and man-made features, including culverts, ditches, reservoirs, and retention/detention basins (Appendix 3.7-B, Attachment 4). Direct and indirect project-related impacts would occur in association with the Allensworth Bypass Alternative, resulting in the permanent disturbance of these jurisdictional waters. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Allensworth Bypass Alternative travels primarily through agricultural lands, in contrast with its corresponding segment under the BNSF Alternative, which runs adjacent to SR 43 and occurs along the BNSF Railway right-of-way. Selection of the Allensworth Bypass Alternative would decrease the amount of permanent impacts on vernal pools and seasonal wetlands and other waters when compared with the corresponding BNSF Alternative (Appendix 3.7-B, Attachment 4). If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass, this could increase permanent impacts on jurisdictional waters (depending on where the BNSF tracks are located) when compared to the corresponding segment of the BNSF Alternative.

Project impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on jurisdictional waters because of the permanent direct and indirect impacts on these waters.

Critical Habitat

Critical habitat does not occur within the footprint of the Allensworth Bypass. Project impacts under this alternative would result in no effect under NEPA and no impact under CEQA on critical habitat. However, project impacts under the Allensworth Bypass, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect on critical habitat under NEPA and in a less-than-significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on critical habitat.

*Conservation Areas***Recovery Plans**

The Allensworth Bypass Alternative overlaps one of the recovery plans that occur in the region: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). A portion of the Allensworth Bypass Alternative occurs in satellite and linkage areas identified in this recovery plan area (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Allensworth Bypass Alternative and its corresponding segment in the BNSF Alternative both overlap the recovery plan area for the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). Selection of the Allensworth Bypass Alternative would decrease the amount of permanent disturbance to the satellite area and greatly increase the amount of permanent disturbance to the linkage area identified in the recovery plan when compared with that of the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

The Allensworth Bypass Alternative does not overlap the recovery plan area of the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). Less than 0.01 acre of the corresponding BNSF Alternative segment falls within the recovery plan area. Neither the Allensworth Bypass Alternative nor the corresponding BNSF Alternative segment would permanently impact this recovery plan (Appendix 3.7-B, Attachment 5).

If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass, this could increase permanent impacts on recovery plans that occur in the region when compared to the corresponding segment of the BNSF Alternative.

Project impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on recovery plans because of the permanent direct and indirect impacts on these plans.

Allensworth Ecological Reserve

The Allensworth Bypass Alternative does not overlap the Allensworth ER (Appendix 3.7-B, Attachment 5). This alternative is approximately 0.5 mile west of Allensworth ER. Therefore, no direct or indirect impacts on the Allensworth ER would occur as a result of project activities on this alternative.

In comparison with the corresponding segment in the BNSF Alternative, the Allensworth Bypass Alternative would have fewer permanent impacts on the Allensworth ER (Appendix 3.7-B, Attachment 5).

Project impacts under the Allensworth Bypass Alternative would result in no effect under NEPA and no impact under CEQA on Allensworth ER. However, project impacts under the Allensworth Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant species and their habitats. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on the Allensworth ER.

Habitat Conservation Plans

The Allensworth Bypass Alternative overlaps one HCP: the draft VFHCP. Project activities on the Allensworth Bypass Alternative would result in permanent disturbance of the high- and low-priority conservation areas of the draft VFHCP (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and

indirect impacts for habitats of concern. However, because the draft VFHCP has not been approved or adopted, the project is not currently required to comply with the provisions of the plan and therefore the project does not conflict with the provisions of the draft VFHCP.

Both the Allensworth Bypass Alternative and the corresponding segment in the BNSF Alternative occur in the low- and high-priority conservation areas identified in the draft VFHCP. Selection of the Allensworth Bypass Alternative would greatly increase the amount of permanent disturbance to high- and low-priority conservation areas identified in the VFHCP when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Allensworth Bypass Alternative nor its corresponding BNSF segment overlaps the planning area of the MBHCP. Therefore, no permanent direct or indirect impacts on the MBHCP would occur as a result of project activities of either of these alternatives.

If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass, this could increase permanent impacts on HCPs that occur in the region when compared to the corresponding segment of the BNSF Alternative.

Project impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on habitat conservation plans. These determinations are due to the permanent direct and indirect impacts on these plans.

Protected Trees

No protected trees were mapped in the Allensworth Bypass Alternative and three unknown trees were mapped in the corresponding segment of the BNSF Alternative. Direct and indirect project-related impacts would occur in association with the Allensworth Bypass Alternative, resulting in the disturbance of protected trees. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Construction of the Allensworth Bypass Alternative would result in a negligible decrease in the number of trees disturbed when compared to the construction of the corresponding segment in the BNSF Alternative (Appendix 3.7-B, Attachment 6).

If the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass, this could increase project impacts on protected trees when compared to the corresponding segment of the BNSF Alternative.

Project impacts on protected trees under the Allensworth Bypass Alternative on protected trees would result in no effect under NEPA and no impact under CEQA. However, construction of the Allensworth Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on protected trees because of the permanent direct and indirect impacts associated with the BNSF Alternative.

Wasco-Shafter Bypass Alternative Alignment

Special-Status Plant Communities

There are no known occurrences of special-status plant communities within the Wasco-Shafter Bypass Alternative. Special-status plant communities have the potential to occur in unsurveyed habitats that have the potential to support special-status plant communities within this alternative (Appendix 3.7-B, Attachment 3). However, these areas are small (<1 acre) and fragmented and are therefore unlikely to support special-status plant communities. Impacts on special-status

plant communities would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Selection of the Wasco-Shafter Bypass Alternative would result in a less-than-substantial difference in permanent impacts on other unsurveyed habitats potentially suitable for special-status plant communities when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 3).

The Wasco-Shafter Bypass Alternative would marginally increase the amount of permanent impacts on unsurveyed habitat that could support special-status plant communities when compared with the corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 3).

Project impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status plant communities and their habitats because of the permanent direct and indirect impacts on these communities.

Jurisdictional Waters

Jurisdictional waters in the Wasco-Shafter Bypass Alternative include man-made structures (e.g., culverts, ditches, and retention/detention basins) (Appendix 3.7-B, Attachment 4). No natural jurisdictional waters (e.g., seasonal wetlands, vernal pools, riparian, and seasonal riverine) would be permanently affected by the use of this alternative (Appendix 3.7-B, Attachment 4). Direct and indirect impacts would occur during construction of the Wasco-Shafter Bypass Alternative, resulting in the permanent disturbance of artificial jurisdictional waters (Appendix 3.7-B, Attachment 4). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Wasco-Shafter Bypass Alternative avoids urban centers and travels entirely through agricultural areas east of SR 43, whereas the corresponding BNSF Alternative segment travels through the urban centers of Wasco and Shafter along the existing, disturbed BNSF Railway right-of-way. Regardless of the alternative, the majority of the impacts would be on man-made features that provide limited ecological value. When considering the magnitude of the impacts, the selection of the Wasco-Shafter Bypass Alternative would slightly decrease the amount of permanent impacts on wetlands and other waters when compared with the corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 4). These differences would be negligible, considering the man-made nature of the majority of these resources.

Project impacts under the Wasco-Shafter Bypass Alternative would result in a negligible effect under NEPA and a less-than-significant impact under CEQA on jurisdictional waters. However, project impacts under the Wasco-Shafter Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on jurisdictional waters. These determinations are due to the permanent direct and indirect impacts on these jurisdictional waters.

Critical Habitat

Critical habitat does not occur within the footprint of the Wasco-Shafter Bypass Alternative. Project impacts under this alternative would result in no effect under NEPA and no impact under CEQA on critical habitat. However, project impacts under the Wasco-Shafter Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect on critical habitat under NEPA and a less-than-significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on critical habitat.

Conservation Areas

Recovery Plans

The Wasco-Shafter Bypass Alternative overlaps one of the two recovery plan areas that occur in the region: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). A portion of the Wasco-Shafter Bypass Alternative occurs in a linkage area identified in this recovery plan. Project activities on the Wasco-Shafter Bypass Alternative would result in permanent disturbance of this recovery plan area (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Wasco-Shafter Bypass Alternative and the corresponding BNSF Alternative segment both occur within the recovery plan area for the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). Selection of the Wasco-Shafter Bypass Alternative would increase the amount of permanent disturbance within the linkage recovery plan area when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Wasco-Shafter Bypass Alternative nor the corresponding BNSF Alternative segment runs through the area covered by the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). Therefore, no permanent direct or indirect impacts on this recovery plan area would occur as a result of project activities on either of these alternatives.

Project impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on recovery plans because of the permanent direct and indirect impacts on these plans.

Allensworth Ecological Reserve

Neither the Wasco-Shafter Bypass Alternative nor its corresponding segment in the BNSF Alternative overlaps the Allensworth ER (Appendix 3.7-B, Attachment 5). Therefore, no permanent direct or indirect impacts on the Allensworth ER would occur as a result of project and operation of either of these alternatives.

Project impacts under the Wasco-Shafter Bypass Alternative would result in no effect under NEPA and no impact under CEQA on Allensworth ER. However, project impacts under the Wasco-Shafter Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant species and their habitats. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on the Allensworth ER.

Habitat Conservation Plans.

The Wasco-Shafter Bypass Alternative overlaps two habitat conservation plans: the MBHCP and the draft VFHCP. Project activities associated with the Wasco-Shafter Bypass Alternative would result in permanent impacts on habitat conservation plan areas (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

The Wasco-Shafter Bypass Alternative occurs in the low-priority conservation areas identified in the draft VFHCP. However, because the draft VFHCP has not been approved or adopted, the project is currently not required to comply with the provisions of the plan and therefore the project does not conflict with the provision of the provisions of the draft VFHCP.

Both the Wasco-Shafter Bypass Alternative and the corresponding BNSF Alternative segment occur within low-priority areas of the draft VFHCP. Selection of the Wasco-Shafter Bypass Alternative would decrease the amount of permanent disturbance to the draft VFHCP plan area when compared with the amount of disturbance in the corresponding BNSF Alternative segment.

Both the Wasco-Shafter Bypass Alternative and the corresponding BNSF Alternative segment overlap the MBHCP plan area. Selection of the Wasco-Shafter Bypass Alternative would decrease the amount of permanent disturbance to the MBHCP plan area when compared with the amount of disturbance in the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Project impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on habitat conservation plans. These determinations are due to the permanent direct and indirect impacts on these plans.

Protected Trees

Trees that may be regulated are present in the Wasco-Shafter Bypass Alternative and in the corresponding segment of the BNSF Alternative. The majority of the trees present in both areas are unidentified, however, a few native oak species could be disturbed. Direct and indirect project-related impacts would occur in association with the Wasco-Shafter Bypass Alternative, resulting in the disturbance of protected trees. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Construction of the Wasco-Shafter Bypass Alternative would result in a significant increase in the number of trees disturbed when compared to the construction of the corresponding segment in the BNSF Alternative (Appendix 3.7-B, Attachment 6).

Project impacts under the Wasco-Shafter Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect on protected trees under NEPA and in a significant impact under CEQA because of the permanent direct and indirect impacts associated with the BNSF Alternative on protected trees.

Bakersfield South Alternative Alignment

Special-Status Plant Communities

During the field surveys, valley foothill riparian was identified along the Kern River of the Bakersfield South Alternative (Appendix 3.7-B, Attachment 3; Table 3.7-6). Additionally, unsurveyed habitats including fragmented habitats within urban areas, riparian forest, alkali desert scrub, and annual grasslands, have the potential to support special-status plant communities. However, the Bakersfield South Alternative is in an urban setting, and the remaining suitable habitat areas are small and fragmented; therefore, special-status plant communities are not expected to be present (except where identified along the Kern River). Permanent impacts would occur in one identified special-status plant communities (i.e., valley foothill riparian) in the Bakersfield South Alternative. Permanent impacts would also occur in unsurveyed habitats that have the potential to support special-status plant communities that may support special-status plant communities. Impacts on special-status plant communities would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Selection of the Bakersfield South Alternative would cause slightly more permanent impacts on one special-status plant community (i.e., valley foothill riparian) and unsurveyed habitats that have the potential to support special-status plant communities than would the corresponding

BNSF Alternative segment (Appendix 3.7-B, Attachment 3). The Bakersfield South Alternative would cause no permanent impacts on black willow thickets, while the corresponding segment of the BNSF Alternative would cause a small amount of permanent impacts (Appendix 3.7-B, Attachment 3). Riparian habitat along the Kern River Corridor receives additional protection under Chapter 19.73 of the Kern County ordinances.

Project impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on special-status plant communities and their habitats because of the permanent direct and indirect impacts on these communities.

Jurisdictional Waters

Wetlands and other waters in the Bakersfield South Alternative include seasonal riverine (e.g., Kern River) and the associated riparian buffer, as well as culverts, canals, ditches, and retention/detention basins. Direct and indirect impacts would occur during construction of the Bakersfield South Alternative, resulting in the permanent disturbance of these jurisdictional waters (Appendix 3.7-B, Attachment 4). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts on habitats of concern.

Both the Bakersfield South Alternative and the corresponding BNSF Alternative segment would be located in areas of urban Bakersfield that contain similar man-made and natural waters. In some instances, because the alternatives are located close together, nearly identical impacts on the jurisdictional waters are anticipated. When compared with the corresponding segment of the BNSF Alternative, the Bakersfield South Alternative would marginally decrease the amount of permanent impacts on other waters and wetlands (Appendix 3.7-B, Attachment 4).

Project impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on jurisdictional waters because of the permanent direct and indirect impacts on these waters.

Critical Habitat

Critical habitat does not occur within the footprint of the Bakersfield South Alternative. Project impacts under this alternative would result in no effect under NEPA and no impact under CEQA on critical habitat. However, project impacts under the Bakersfield South Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect on critical habitat under NEPA and a less-than-significant impact under CEQA. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on critical habitat.

Conservation Areas

Recovery Plans

The Bakersfield South Alternative overlaps one of two recovery plan areas that occur in the region: *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). A portion of the Bakersfield South Alternative occurs in a satellite area identified in this recovery plan. Project impacts associated with the Bakersfield South Alternative would result in permanent disturbance of this recovery plan area (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Both the Bakersfield South Alternative and the corresponding BNSF Alternative segment occur within the recovery plan area identified in the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). Selection of the Bakersfield South Alternative would greatly decrease the amount of permanent disturbance to this recovery plan area when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Bakersfield South Alternative nor the corresponding BNSF Alternative segment overlaps the recovery plan area of the *Recovery Plan for Vernal Pool Ecosystems for California and Southern Oregon* (USFWS 2005). Therefore, no permanent direct or indirect impacts on this recovery plan area would occur as a result of project impacts associated with either of these alternatives.

Project impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on recovery plans because of the permanent direct and indirect impacts on these plans.

Allensworth Ecological Reserve

Neither the Bakersfield South Alternative nor its corresponding segment in the BNSF Alternative overlaps the Allensworth ER (Appendix 3.7-B, Attachment 5). Therefore, no permanent direct or indirect impacts on the Allensworth ER would occur as a result of project impacts associated with either of these alternatives.

Project impacts under the Bakersfield South Alternative would result in no effect under NEPA and no impact under CEQA on Allensworth ER. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a moderate effect under NEPA and in a significant impact under CEQA on special-status plant species and their habitats. These determinations are due to the permanent direct and indirect impacts associated with the BNSF Alternative on the Allensworth ER.

Habitat Conservation Plans

The Bakersfield South Alternative overlaps one habitat conservation plan: the MBHCP. Project activities associated with the Bakersfield South Alternative would result in permanent disturbance of the plan area of the MBHCP (Appendix 3.7-B, Attachment 5). These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for habitats of concern.

Both the Bakersfield South Alternative and the corresponding BNSF Alternative segment occur within the plan area for the MBHCP. Selection of the Bakersfield South Alternative would greatly decrease the amount of permanent disturbance to the plan area of the MBHCP when compared with the corresponding BNSF Alternative segment (Appendix 3.7-B, Attachment 5).

Neither the Bakersfield South Alternative nor the corresponding BNSF Alternative segment overlaps the plan area for the draft VPHCP. Therefore, no permanent direct or indirect impacts on the draft VPHCP plan area would occur as a result of project impacts associated with either of these alternatives.

Project impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a negligible effect under NEPA and in a less-than-significant impact under CEQA on habitat conservation plans. These determinations are due to the permanent direct and indirect impacts on these plans.

Protected Trees

Trees that may be regulated under the Kern River Plan Element and/or the City of Bakersfield Municipal Code are present in the Bakersfield South Alternative and in the corresponding segment of the BNSF Alternative (Appendix 3.7-B, Attachment 6). Direct and indirect impacts would occur during project activities of the Bakersfield South Alternative, resulting in the permanent loss of protected trees. These impacts would occur through the same mechanisms as those described above under the direct and indirect impact on habitats of concern.

Construction of the Bakersfield South Alternative would result in an increase in the number of trees disturbed when compared to the construction of the corresponding segment in the BNSF Alternative (Appendix 3.7-B, Attachment 6). Project impacts under the Bakersfield South Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on protected trees because of the permanent direct and indirect impacts associated with the BNSF Alternative.

Heavy Maintenance Facility Alternatives

Table 3.7-15 lists habitats of concern potentially affected by the HMF alternatives. This table reflects the presence or absence of habitats of concern within each HMF footprint and the potential for permanent project-related impacts to occur.

Table 3.7-15

Habitats of Concern Potentially Affected by the HMF Alternatives during Project Operation

HMF Alternatives	Special-Status Plant Communities ^a (acres)	Jurisdictional Waters (acres)	Critical Habitat (acres)	Conservation Areas			Protected Trees
				Recovery Plans (acres)	Allensworth ER (acres)	HCPs (acres)	
Total Impact Acreage and NEPA/CEQA Determinations							
Fresno Works-Fresno	12.06 Moderate effect/ Significant impact	6.61 Substantial effect/ Significant impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	76 Substantial effect/ Significant impact
Kings County—Hanford	39.02 Moderate effect/ Significant impact	1.88 Substantial effect/ Significant impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/No impact
KCOG – Wasco	— No effect/ No impact	1.40 Moderate effect/ Significant impact	— No effect/ No impact	74.74 Substantial effect/ Significant impact	— No effect/ No impact	416.25 Negligible effect/ Less than significant	— No effect/No impact

Table 3.7-15
Habitats of Concern Potentially Affected by the HMF Alternatives during Project Operation

HMF Alternatives	Special-Status Plant Communities ^a (acres)	Jurisdictional Waters (acres)	Critical Habitat (acres)	Conservation Areas			Protected Trees
				Recovery Plans (acres)	Allensworth ER (acres)	HCPs (acres)	
	Total Impact Acreage and NEPA/CEQA Determinations						
KCOG – Shafter East	0.10 Negligible effect/Less than significant impact	1.14 Moderate effect/ Significant impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	495.16 Negligible Effect/ Less than significant	— No effect/No impact
KCOG – Shafter West	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	477.08 Negligible Effect/ Less than significant	— No effect/No impact
Notes: — = No impact or not applicable All impacts were calculated based on 15% engineering design construction footprint. ^a Includes acreage of impacts to potentially suitable habitat that could support special-status plant communities.							

Station Alternatives

Table 3.7-16 lists habitats of concern potentially affected by the station alternatives. This table reflects the presence or absence of habitats of concern within each station footprint and the potential for permanent project-related impacts to occur.

Table 3.7-16

Habitats of Concern Potentially Affected by the Station Alternatives during Project Operation

Station Alter-natives	Special- Status Plant Communi- ties ^a	Jurisdic- tional Waters	Critical Habitat	Conservation Areas			Protected Trees
				Recovery Plans	Allens- worth ER	HCPs	
	Total Impact Acreage and NEPA/CEQA Determinations						
Fresno Station - Mariposa	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	14 Moderate effect/ Significant impact
Fresno Station - Kern	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	5 Negligible effect/ Significant impact
Kings/Tulare Regional Station	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	— No effect/No impact
Bakersfield Station - North	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	21.14 Moderate effect/ Significant impact	— No effect/ No impact	21.14 Negligible Effect/Less than significant	12 Moderate effect/ Significant impact
Bakersfield Station - South	— No effect/ No impact	— No effect/ No impact	— No effect/ No impact	23.86 Moderate effect/ Significant impact	— No effect/ No impact	23.86 Negligible Effect/Less than significant	5 Negligible effect/ Significant impact
Notes: — = No impact or not applicable All impacts were calculated based on 15% engineering design construction footprint. ^a Includes acreage of impacts to potentially suitable habitat that could support special-status plant communities.							

Wildlife Movement Corridors

The project incorporates a number of engineering designs that would facilitate wildlife movement. At select locations, specific wildlife movement structures would be installed (as described in Section 2, Alternatives). However, implementation, including design and locations of these structures, vary across the HST alternatives due to existing adjacent infrastructure.

Direct Project-Related Impacts

Sections of the HST alternatives would facilitate wildlife movement across corridors, including elevated tracks, road overcrossings and undercrossings, and specific structures designed for wildlife crossings, which could allow for unimpeded wildlife movement (as described in Section 2,

Alternatives); however, at-grade sections of the HST alternatives would result in direct impacts at linkage crossings. Direct impacts include the permanent blockage or barrier effect of the constructed HST along the reach of wildlife movement corridors and/or wildlife linkages. Depending on the HST alternatives crossing locations within the areas of the corridors and linkages the magnitude of effect could result in either a negligible effect (i.e., no crossing) or a substantial effect with installation of a barrier. In most instances, if the HST alternative crosses a corridor and/or linkage, there would be a moderate to substantial effect depending on the elevated status and degree of potential barrier effect. Sound walls installed for noise mitigation are not expected to impact wildlife movement (see Section 3.4, Noise and Vibration).

Indirect Project-Related Impacts

In addition to HSTs passing over tracks through wildlife movement corridors, implementation of the project would require ongoing operation and maintenance activities (e.g., routine inspection and maintenance of the HST right-of-way). These operational activities occurring at or in the vicinity of wildlife movement corridors may result in indirect disruption of wildlife movement through lighting, noise, motion, and startle effects.

Some indirect disturbance of the habitats associated with a wildlife corridor may ultimately preclude the use of that corridor by wildlife species. In addition, habitat shifts (toward non-native and/or disturbed type communities) that may occur over time (through indirect effects) can render wildlife corridors unusable for many species, as those that are substantially degraded may no longer provide food, cover, or ease of travel for many species.

BNSF Alternative Alignment

The BNSF Alternative passes through all of the identified linkages discussed above; thus this alternative would directly and indirectly impact regional wildlife movement. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for wildlife movement corridors.

In portions of the urban areas of Fresno, Wasco, Shafter, and Bakersfield, and in the vicinity of riparian corridors associated with portions of the St. John's River–Cross Creek, SR 43/SR 155, Deer Creek–Sand Ridge, and Kern River linkages, the BNSF Alternative would be constructed on an elevated structure (Figure 3.7-2), resulting in open areas at ground level for local urban wildlife movement. While portions of the BNSF Alternative would be elevated, large sections would be at-grade, which would adversely affect local and regional wildlife movement, particularly those located along riparian corridors. The at-grade sections would particularly affect portions of movement corridors within the Kings River, St. John's River-Cross Creek, SR 43/SR 155, Deer Creek-San Ridge, and Poso Creek linkages.

Project impacts under the BNSF Alternative would result in a substantial effect under NEPA on wildlife movement corridors during project activities. The impact would be significant under CEQA.

Corcoran Elevated Alternative Alignment

The Corcoran Elevated Alternative does not overlap an identified wildlife movement corridor. Both the Corcoran Elevated Alternative and the corresponding BNSF Alternative segment would not affect identified wildlife movement corridors.

Project impacts under the Corcoran Elevated Alternative would result in no effect under NEPA and no impact under CEQA on wildlife movement corridors. However, project impacts under the Corcoran Elevated Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under

CEQA on wildlife movement corridors. These determinations are due to the permanent direct and indirect impacts on these corridors.

Corcoran Bypass Alternative Alignment

The Corcoran Bypass Alternative passes through the SR 43/SR 155 and St. John's River-Cross Creek linkages; thus this alternative would directly and indirectly affect wildlife movement corridors. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts on wildlife movement corridors.

The Corcoran Bypass Alternative would result in greater impacts on wildlife movement corridors than would its corresponding segment of the BNSF Alternative. The Corcoran Bypass Alternative would largely bisect natural land blocks at-grade where wildlife currently move unobstructed.

Project impacts under the Corcoran Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on wildlife movement corridors because of the permanent direct and indirect impacts on these corridors.

Allensworth Bypass Alternative Alignment

The Allensworth Bypass Alternative passes through the SR 43/SR 155, Deer Creek–Sand Ridge, and Poso Creek linkages, and has the potential to affect wildlife movement corridors in these linkages. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for wildlife movement corridors. Both the Allensworth Bypass Alternative and the corresponding BNSF Alternative segment would affect natural lands, including annual grasslands, which provide suitable habitat for a number of wildlife species.

The use of the Allensworth Bypass Alternative would create a new wildlife barrier, because it is primarily a new linear corridor constructed predominantly at-grade. However, because the Allensworth Bypass Alternative would not be constructed adjacent to existing infrastructure (e.g., SR 43 and the BNSF railroad), the existing barriers to wildlife movement, and the risk of strikes with vehicles and trains would not be compounded as it would be for the corresponding segment of the BNSF Alternative. However, if the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass Alternative, this would compound the barriers to wildlife movement in this area.

If the BNSF tracks are not relocated to be adjacent to the HST tracks in the Allensworth Bypass Alternative, the impacts associated with the Allensworth Bypass Alternative (further fragmentation of the linkage in a new linear corridor) would be less detrimental to wildlife movement corridors when compared with the impacts associated with the corresponding BNSF Alternative segment (further impairment/fragmentation of an existing linear corridor). However, if the BNSF tracks are relocated to be adjacent to the HST tracks in the Allensworth Bypass Alternative, impacts to wildlife movement corridors would be similar between the Allensworth Bypass Alternative and its corresponding segment of the BNSF Alternative, and could potentially be worse since it would be a new compounded wildlife barrier.

Project impacts under the Allensworth Bypass Alternative, by itself, or when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on wildlife movement corridors because of the permanent direct and indirect impacts on these corridors.

Wasco-Shafter Bypass Alternative Alignment

The Wasco-Shafter Bypass Alternative does not overlap an identified wildlife movement corridor. Both the Wasco-Shafter Bypass Alternative and the corresponding BNSF Alternative segment would not affect identified wildlife movement corridors. Project impacts under the Wasco-Shafter Bypass Alternative would result in no effect under NEPA and no impact under CEQA on wildlife movement corridors. However, project impacts under the Wasco-Shafter Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on wildlife movement corridors. These determinations are due to the permanent direct and indirect impacts on these corridors.

Bakersfield South Alternative Alignment

The Bakersfield South Alternative passes through the Kern River linkage and has the potential to impact wildlife movement corridors. These impacts would occur through the same mechanisms as those described above under the direct and indirect impacts for wildlife movement corridors.

Project design in this area would use an elevated viaduct throughout the entire area of Bakersfield for both the Bakersfield South Alternative and the corresponding BNSF Alternative segment (Figure 3.7-2), and would retain opportunities for local urban wildlife movement. Impacts on wildlife movement through the corridor would occur during construction activities. However, the viaduct design would minimize the long-term effects to wildlife movement in the Kern River linkage.

The use of the Bakersfield South Alternative rather than the corresponding BNSF Alternative would not change the level or degree of impacts because impacts on wildlife movement corridors would be similar.

Project impacts under the Bakersfield South Alternative would result in a moderate effect under NEPA and a significant impact under CEQA on wildlife movement corridors. However, project impacts under the Wasco-Shafter Bypass Alternative, when considered with the remaining segments of the BNSF Alternative, would result in a substantial effect under NEPA and in a significant impact under CEQA on wildlife movement corridors. These determinations are due to the permanent direct and indirect impacts on these corridors.

Heavy Maintenance Facility Alternatives

Table 3.7-17 lists wildlife movement corridors potentially affected by the HMF alternatives. This table reflects the presence or absence of wildlife movement corridors within each HMF footprint and the potential for project-related impacts to occur.

Table 3.7-17
Wildlife Movement Corridors Potentially Affected by the
HMF Alternatives during Project Operation

HMF Alternatives	Wildlife Movement Corridors
Fresno Works-Fresno	Negligible Effect/Less-than-Significant Impact
Kings County-Hanford	Negligible Effect/Less-than-Significant Impact
Kern Council of Governments-Wasco	Substantial Effect/Significant Impact
Kern Council of Governments-Shafter East	Negligible Effect/Less-than-Significant Impact
Kern Council of Governments-Shafter West	Negligible Effect/Less-than-Significant Impact

Station Alternatives

Fresno Station–Mariposa: Wildlife movement corridors are not mapped within the urbanized Fresno Station–Mariposa footprint. The station has limited potential to disrupt wildlife movement throughout the region. Project activities at Fresno Station–Mariposa would result in a negligible effect on wildlife movement corridors under NEPA, and in a less-than-significant impact under CEQA.

Fresno Station–Kern: Wildlife movement corridors are not mapped within the urbanized Fresno Station–Kern footprint. The station has limited potential to disrupt wildlife movement throughout the region. Project activities at Fresno Station–Kern would result in a negligible effect on wildlife movement corridors under NEPA, and in a less-than-significant impact under CEQA.

Kings/Tulare Regional Station: Identified wildlife movement corridors are absent within the Kings/Tulare Regional Station footprint. The station has limited potential to disrupt wildlife movement throughout the region. Project activities at Kings/Tulare Regional Station would result in a negligible effect on wildlife movement corridors under NEPA, and in a less-than-significant impact under CEQA.

Bakersfield Station–North: Wildlife movement corridors are not present within the Bakersfield Station–North footprint. Bakersfield Station–North is limited to urban land uses. Therefore, project activities at Bakersfield Station–North would result in a negligible effect on wildlife movement corridors under NEPA. The impact would be less than significant under CEQA.

Bakersfield Station–South: Wildlife movement corridors are not present within the Bakersfield Station–South footprint. Bakersfield Station–South is limited to urban land uses. Therefore, project activities at Bakersfield Station–South would result in a negligible effect on wildlife movement corridors under NEPA. The impact would be less than significant under CEQA.

3.7.6 Mitigation Measures

The mitigation measures in this section identify avoidance, minimization, and compensation measures to minimize potential impacts and effects on biological resources by the HST alternative alignments, station alternatives, and HMF alternatives. Many of these mitigation measures have multiple benefits that avoid, protect, or compensate for the impacts and effects on various biological resources.

These mitigation measures will be refined in coordination with federal, state, and local agencies. Representative agencies involved in early coordination include USFWS, USACE, EPA, CDFG, and RWQCB. This coordination effort includes consideration for the type, timing, and location of mitigation measures, including consideration for early implementation, as feasible.

The habitat creation, restoration, and/or revegetation ratios presented here are based upon and ultimately depend on the type of impact (i.e., permanent or temporary), scarcity of the resource, and performance anticipated.

In regards to special-status species, the avoidance, minimization, and mitigation measures are specific to special-status species' known geographic ranges and their suitable habitats, and species-specific measures will not be required when the habitat or range is not located within the construction footprint.

The following roles and definitions represent the lead biology positions responsible for monitoring, reporting, and implementing the mitigation measures and associated terms and conditions. Other support roles may include restoration ecologists, landscape architects, and special-status species experts.

- Project Biologist: The Project Biologist represents the construction management team, reports directly to the Authority, and is responsible for reporting and overseeing the biological resources mitigation measures from the Final California HST Fresno to Bakersfield Section EIR/EIS. The Project Biologist is also responsible for ensuring that the terms and conditions in USFWS, USACE, RWQCB, and CDFG permits are outlined in the Mitigation Monitoring and Reporting Program (MMRP). The Project Biologist will report to the overall construction management team Mitigation Manager (Mitigation Manager), interact with the designated Resident Engineer for the Fresno to Bakersfield Section and will work to provide quality assurance on the implementation of the biological resources mitigation program as performed by the Contractor and the designated Contractor's Biologist. It is anticipated that the Project Biologist will have specialized support from other biological monitors and will work with the Mitigation Manager during deployment of the monitors and in performance of their respective responsibilities.
- Mitigation Manager: The Mitigation Manager is responsible for overseeing the implementation and compliance of all project-related mitigation measures and will support the construction management team. The Project Biologist will report to the Mitigation Manager to verify compliance with biological resources mitigation measures.
- Contractor's Biologist: The Contractor's Biologist is responsible for implementing mitigation measures in compliance with the terms and conditions outlined in the Mitigation, Monitoring, and Reporting Program (MMRP) and the USFWS, USACE, RWQCB, and CDFG permits. The Contractor's Biologist will work to implement mitigation reflected within the construction drawings and specifications. The Contractor's Biologist will keep the Project Biologist informed of the progress, planning, implementation, and activities conducted in support of the biological resources mitigation program.
- Project Biological Monitor: The Project Biological Monitor will be approved by and report directly to the Project Biologist. The Project Biological Monitor will be onsite during all ground-disturbing activities that have the potential to affect biological resources and will be the principal agent(s) in the direct implementation of the MMRP and compliance assurance. The Project Biological Monitor is responsible for Worker Environmental Awareness Program (WEAP) training, general surveys, compliance monitoring, and reporting. The Project Biological Monitor will act on behalf of the Project Biologist.

Statewide Program EIR/EIS mitigation strategies have been refined and adapted for this project-level EIR/EIS. The following mitigation measures could be implemented to reduce substantial, adverse environmental impacts and effects resulting from the construction and operation of the Fresno to Bakersfield Section HST System. These mitigation measures could be incorporated into the MMRP grouped by construction period impacts and project impacts. Construction period mitigation measures include all temporary impacts and effects associated with ground-disturbing activities. Project mitigation measures include all permanent impacts and effects associated with ground-disturbing activities, as well as impacts and effects from HST operation and maintenance activities.

A. Common Mitigation Measures for Biological Resources

The following common mitigation measures could be implemented, as applicable, during construction period impacts and project impacts to avoid and/or minimize impacts and effects on biological resources. In addition, resource-specific mitigation measures could be implemented to directly or indirectly avoid or minimize the impacts and effects to the specific biological resource (e.g., special-status species, habitats of concern, and wildlife movement corridor). Many of the common mitigation measures apply throughout the biological resources program cover multiple species and habitats.

In addition, apply mitigation measures described in Section 3.3. Air Quality and Global Climate Change, Section 3.4 Noise and Vibration, Section 3.8 Hydrology and Water Resources, Section 3.10 Hazardous Materials and Wastes, and Section 3.15 Parks, Recreation, and Open Space that are also applicable to avoid and minimize impacts and effects on biological resources. These measures are:

- **AQ-MM#1.** Reduce Fugitive Dust by Watering.
- **AQ-MM#3.** Reduce Fugitive Dust from Material Hauling.
- **N&V-MM#1.** Install Noise Barriers.
- **PC-MM#1.** Compensate for Staging in Park Property for Construction.
- **PP-MM#1.** Acquire Park Property.
- **WR-MM#1.** Construct Stormwater Pollution Prevention Plan.
- **WR-MM#2.** Comply with Central Valley Regional Water Quality Board, Order No. 5-00-175, Waste Discharge Requirements General Order for Dewatering and Other Low-Threat Discharges to Surface Waters.

Bio-MM#1. Designate Project Biologist(s), Contractor's Biologist(s), and Project Biological Monitor(s). During contract procurement and for construction management and Contractor selection and prior to ground-disturbing activities, designate a Project Biologist(s), a Contractor's Biologist(s), and a Project Biological Monitor(s) responsible for conducting biological monitoring, overseeing regulatory compliance requirements, and monitoring restoration activities associated with ground-disturbing activities in accordance with the adopted mitigation measures and applicable laws.

The Project Biologist's duties include reviewing design documents and construction schedules and determining which Project Biological Monitor(s), depending on type of biological issues, need(s) to report to the construction site each day. The Project Biologist informs the Biological Monitors as to which mitigation measures should be documented each day and of any special issues that arise during meetings with the construction management team and/or the Contractor's team.

The Contractor's Biologist is responsible for the timely implementation of the biological mitigation measures as outlined in the MMRP and construction documents and pertinent resource agency permits.

The Project Biological Monitor's duties include monitoring construction crew activities, as needed, to document applicable mitigation measures and permit conditions.

Bio-MM#2. Regulatory Agency Access. If requested, before, during, or upon completion of ground-disturbing activities, allow access by USFWS, USACE, RWQCB, and CDFG staff to the construction site. Because of safety concerns, agency personnel will check in with the Resident Engineer prior to accessing the construction site.

Bio-MM#3. Prepare and Implement a Worker Environmental Awareness Program. Prior to ground-disturbing activities, prepare and implement a Work Environmental Awareness Program (WEAP) for construction crews. WEAP training materials include the following: discussion of the federal ESA, CESA, Bald and Golden Eagle Protection Act (BGEPA), and the MBTA; consequences and penalties for violation or noncompliance with these laws and regulations and project permits; identification and value of special-status plants, special-status wildlife, jurisdictional waters, and special-status plant communities; hazardous substance spill prevention and containment measures; the contact person in the event of the discovery of a dead or injured wildlife species; and review of mitigation measures. In the WEAP, detail construction timing in relation to habitat and species' life stage requirements and discuss project maps, showing areas of planned minimization and avoidance measures.

Implement the WEAP training before the initiation of construction activities and repeat, as needed, when new personnel begin work within the construction footprint. Perform daily updates and synopsis of the training during the daily safety ("tailgate") meeting. Require that all personnel who attend the training sign an attendance list stating that they have received the WEAP training. Require that HST maintenance crews attend a WEAP training annually.

Bio-MM#4. Prepare and Implement a Weed Control Plan. Prior to ground-disturbing activities, prepare and implement a Weed Control Plan to minimize or avoid the spread of weeds during ground-disturbing activities. In the Weed Control Plan, address the following:

- Identify weed control treatments including permitted herbicides, and manual and mechanical methods for application. Restrict herbicide application from use in Environmentally Sensitive Areas.
- Determine timing of the weed control treatment for each plant species.
- Identify fire prevention measures.

Implement the Weed Control Plan during the construction period and require that HST maintenance crews follow the guidelines in the Weed Control Plan during project operation.

Bio-MM#5. Prepare and Implement a Biological Resources Management Plan. During final design, prepare the Biological Resources Management Plan (BRMP) and assemble the biological resources mitigation measures. In the BRMP, include terms and conditions from applicable permits and agreements and make provisions for monitoring assignments, scheduling, and responsibility. The BRMP will also include habitat replacement and revegetation, protection during ground-disturbing activities, performance (growth) standards, maintenance criteria, and monitoring requirements for temporary and permanent native plant community impacts. Form the parameters for the BRMP with the mitigation measures from this project-level EIR/EIS, including terms and conditions as applicable from the USFWS, USACE, RWQCB, and CDFG.

In the BRMP organize the biological resources mitigation measures and terms and conditions to help facilitate their implementation.

Oversee the implementation of the BRMP and prepare compliance reports to document implementation and performance.

Bio-MM#6. Prepare and Implement a Restoration and Revegetation Plan. During final design, prepare a restoration and revegetation plan (RRP) for temporarily disturbed upland communities (Bio-MM#44 addresses temporarily disturbed riparian areas and Bio-MM#45 addresses jurisdictional waters). In the RRP, address impacts on habitat subject to temporary ground disturbances that will require decompaction or regrading, if appropriate.

During ground-disturbing activities, implement the RRP in temporarily disturbed areas. Prepare and submit compliance reports to document implementation and performance standards.

Bio-MM#7. Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). Prior to ground-disturbing activities, to the extent practicable, verify that environmentally sensitive areas and environmentally restricted areas (ERAs) are delineated as appropriate. Environmentally Sensitive Areas are areas within the construction zones containing suitable habitat for special-status species and habitats of concern that may allow construction activities but have restrictions based on the presence of special-status species or habitats of concern at the time of construction. ERAs are areas outside the construction footprint that must be protected in-place during all construction activities.

Prior to ground-disturbing activities, include all environmentally sensitive areas and ERAs on final construction plans (including grading and landscape plans). Prepare, review, and approve the map of all environmentally sensitive areas and ERAs on the design drawings and work to update the map as necessary.

Prior to during ground-disturbing activities, install the environmentally sensitive areas and ERAs. Mark environmentally sensitive areas and ERAs with high-visibility temporary fencing, flagging, or other barrier to prevent encroachment of construction personnel and equipment. Designate the two categories, environmentally sensitive areas and ERAs, differently in the field (e.g., different colored flagging/fencing). Use submeter accurate GPS equipment to delineate all environmentally sensitive areas and ERAs. Remove environmentally sensitive area and ERA fencing when construction is complete or when the resource has been cleared according to agency permit conditions in the MMRP and construction drawings and specifications.

Bio-MM#8. Wildlife Exclusion Fencing. Install exclusion barriers (e.g., silt fences) at the edge of the construction footprint. Wildlife exclusion fencing will be installed along the outer perimeter of environmentally sensitive areas and ERAs. The design specifications of the exclusion fencing will be determined through consultation with the USFWS and/or CDFG.

Bio-MM#9. Equipment Staging Areas. Prior to ground-disturbing activities, locate staging areas for construction equipment outside sensitive biological resources including habitat for special-status species, habitats of concern, and wildlife movement corridors, to the maximum extent possible.

Bio-MM#10. Mono-Filament Netting. During ground-disturbing activities, verify that plastic mono-filament netting (erosion-control matting) or similar material is not used in erosion control materials; substitutes include coconut coir matting or tackified hydroseeding compounds.

Bio-MM#11. Vehicle Traffic. During ground-disturbing activities, restrict project-related vehicle traffic, within the construction area, to established roads, construction areas, and other designated areas. Establish vehicle traffic in locations disturbed by previous activities to prevent further adverse effects. Observe a 20-mph speed limit for construction areas with potential special-status species habitat. Clearly flag and mark access routes and prohibit off-road traffic.

Bio-MM#12. Entrapment Prevention. Cover all excavated, steep-sided holes or trenches more than eight inches deep at the close of each working day with plywood or similar materials, or provide a minimum of one escape ramp per 10 feet of trenching constructed of earth fill. Before such holes or trenches are filled, thoroughly inspect them for trapped animals.

Screen all culverts or similar enclosed structures with a diameter of 4 inches, or greater, to prevent use by wildlife. Stored material will be cleared for common and special-status wildlife species before the pipe is subsequently used or moved.

Bio-MM#13. Work Stoppage. During ground-disturbing activities, halt work in the event that a special-status wildlife species gains access to the construction footprint. Suspend ground-disturbing activities in the immediate construction area that could reasonably result in a take of special-status wildlife species. Continue the suspension until the individual leaves voluntarily, is relocated to a release area using USFWS- and/or CDFG-approved handling techniques and relocation methods, or as required by USFWS or CDFG.

Bio-MM#14. 'Take' Notification and Reporting. Notify USFWS and/or CDFG immediately in the case of an accidental death or injury to a federal or state listed species during project-related activities.

Bio-MM#15. Post-Construction Compliance Reports. The Project Biologist, after each construction phase is completed, will submit post-construction compliance reports consistent with the appropriate agency (e.g., UFSWS and CDFG) protocols.

B. Construction-Period Mitigation Measures

Special-Status Species

In addition to the common mitigation measures (Bio-MM#1 through Bio-MM#15) that apply to all biological resources, specific measures will be implemented to avoid and/or minimize project-related impacts and effects on special-status species. As applicable, mitigation measures (Bio-MM#51 through Bio-MM#58) may also reduce the impacts to special-status species during the construction period. Furthermore, in some instances mitigation measures associated with habitats of concern and wildlife movement corridors during the construction period and/or project operation may also directly or indirectly avoid and/or minimize impacts and effects on special-status species.

The section presents the mitigation measures that will be implemented to avoid and minimize impacts and effects to special-status species and is organized by species guild during construction period impacts.

Special-Status Plant Species and Special-Status Plant Communities

The implementation of the applicable common mitigation measures (Bio-MM#1 through Bio-MM#15) will also directly or indirectly reduce impacts and effects on special-status plant species and special-status plant communities, as applicable. In addition, the following resource-specific mitigation measures are proposed during construction period impacts.

Bio-MM#16. Conduct Preconstruction Surveys for Special-Status Plant Species and Special-Status Plant Communities. Conduct preconstruction surveys for special-status plant species and special-status plant communities in all potentially suitable habitats where permission to enter was not granted during the spring and summer 2010 field surveys. Conduct surveys during the appropriate blooming period(s) for the species prior to ground-disturbing activities for salvage and relocation activities.

Mark and avoid locations of all special-status plant species and special-status plant communities observed where feasible. Prior to ground-disturbing activities, protect all populations of special-status plant species and special-status plant communities identified during preconstruction surveys within 100 feet of the construction footprint as ERAs. As appropriate, update the special-status or habitats of concern mapping within the construction limits, based upon resource agency permits.

If special-status plant species cannot be avoided, incorporate into a relocation/compensation program, as defined in Bio-MM#17 and Bio-MM#51.

Bio-MM#17. Prepare and Implement Plan for Salvage, Relocation and/or Propagation of Special-Status Plant Species. Prepare a plan prior to ground-disturbing activities to address monitoring, salvage, relocation, and propagation of special-status plant species. Permit conditions issued by the appropriate resource agencies (e.g., USFWS, CDFG) will guide the development of the plan.

Special-Status Wildlife Species

Invertebrates

The implementation of the applicable common mitigation measures (Bio-MM#1 through Bio-MM#15), invertebrate mitigation measures (Bio-MM#52 and Bio-MM#53), and other mitigation measures pertaining to the jurisdictional waters (including vernal pools) and special-status plant communities (including riparian areas) will also directly or indirectly reduce project-related impacts and effects on special-status invertebrate species, as applicable. In addition, the following species-specific mitigation measures are proposed.

Vernal Pool Branchiopods

Bio-MM#18. Conduct Preconstruction Surveys for Vernal Pool Fauna. Prior to ground-disturbing activities, conduct preconstruction aquatic assessment and sampling in seasonal wetlands, vernal pools, in the construction footprint.

After the field assessment is conducted, conduct general aquatic surveys in appropriate habitats at a suitable interval after the first significant storm event of the rainy season (October 15 to June 1), as feasible, prior to ground-disturbing activities.

The sampling includes an assessment of hydrologic, biotic, and ecological conditions. This assessment will determine the quality and suitability of seasonal wetlands for special-status species (e.g., vernal pool branchiopods, western spadefoot toads, and California tiger salamanders). The results of the assessment will identify locations where other mitigation measures will be implemented to avoid, minimize, and compensate for impacts and effects to special-status species (e.g., Bio-MM#19, Bio-MM#20, and Bio-MM#61).

Bio-MM#19. Seasonal Vernal Pool Work Restriction. For seasonal avoidance of special-status vernal pool branchiopods and vernal-pool-dependent species (e.g., vernal pool branchiopods, western spadefoot toads, and California tiger salamander), do not work within 250 feet of aquatic habitats suitable (e.g., vernal pools and seasonal wetlands) from October 15 to June 1 (corresponding to the rainy season), or as determined through informal or formal consultation with the USFWS or USACE. Ground-disturbing activities may begin once the habitat is no longer inundated for the season. If any work remains to be completed after October 15, exclusion fencing will be placed in those areas where construction activities need to be completed (Bio-MM#8. Wildlife Exclusion Fencing).

Bio-MM#20. Implement and Monitor Vernal Pool Protection. For temporary impacts on vernal pools that cannot be avoided, apply geotextile fabric and a layer of gravel over the affected vernal pool(s) prior to ground-disturbing activities to protect the contours. Implement this measure within temporary impact areas adjacent to or within the construction footprint.

Valley Elderberry Longhorn Beetle

Bio-MM#21. Implement Conservation Guidelines for the Valley Elderberry Longhorn Beetle. Prior to and during ground-disturbing activities, implement the avoidance and minimization measures detailed in the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (USFWS 1999a). These measures include conducting protocol-level surveys for this species, establishing and maintaining appropriate buffer areas around elderberry plants, restricting the use of chemicals that might harm beetles and mowing restrictions. After ground-disturbing activities are completed, restore any damage to temporarily disturbed buffer areas surrounding elderberry shrubs as detailed in the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (USFWS 1999a).

Reptiles and Amphibians

The common mitigation measures (Bio-MM#1 through Bio-MM#15), mitigation measures (Bio-MM#54 and Bio-MM#55) and other mitigation measures pertaining to the jurisdictional waters (including vernal pools) will also directly and/or indirectly reduce impacts and effects on reptiles and amphibians and will be implemented during construction period impacts as applicable. In addition, the following species-specific mitigation measures are proposed to be implemented during the construction period.

Special-Status Reptile and Amphibians Species: Western Spadefoot, Western Pond Turtle, Silvery Legless Lizard, San Joaquin Whipsnake, Coast Horned Lizard, California Tiger Salamander

Bio-MM#22. Conduct Preconstruction Surveys for Special-Status Reptile and Amphibian Species. Prior to ground-disturbing activities, conduct preconstruction surveys in suitable habitats to determine the presence or absence of special-status reptiles and amphibian species within the construction footprint. Surveys will be conducted no more than 30 days before the start of ground-disturbing activities and will be phased with project build out.

The results of the preconstruction survey will be used to guide the placement of the environmentally sensitive areas, ERAs, and wildlife exclusion fencing.

Bio-MM#23. Conduct Special-Status Reptile and Amphibian Monitoring, Avoidance, and Relocation. During ground-disturbing activities, observe all construction activities in habitat that supports special-status reptiles and amphibians. If environmentally sensitive areas are deemed necessary, conduct a clearance survey for special-status reptiles and amphibians after the exclusion fence is installed. If necessary, conduct daily clearance surveys.

If a special-status reptile or amphibian is present during construction, avoid the special-status reptile or amphibian species, where feasible. Otherwise, relocate special-status reptiles or amphibians found in the construction footprint outside the project area as determined through consultation with USFWS and/or CDFG.

Blunt-Nosed Leopard Lizard

The blunt-nosed leopard lizard is a California Fully Protected Species. As such, measures must be taken to completely avoid (not just minimize) take of this species.

Bio-MM#24. Conduct Protocol-Level Surveys for Blunt-Nosed Leopard Lizard. Protocol-level surveys for the blunt-nosed leopard lizard will be conducted by qualified biologist(s) one year prior to the start of construction. These surveys will be conducted in areas of suitable habitat in accordance with the *Approved Survey Methodology for the Blunt-Nosed Leopard Lizard* (CDFG 2004).

Bio-MM#25. Conduct Preconstruction Surveys for Blunt-Nosed Leopard Lizard. A qualified biologist (designated by the Project Biologist), will conduct visual preconstruction surveys in suitable habitats in the project area to detect this species. These surveys will be conducted no more than 30 calendar days prior to the start of ground-disturbing activities and will be phased with project build out. The Project Biological Monitor will also conduct daily clearance surveys prior to construction activities.

Bio-MM#26. Blunt-Nosed Leopard Lizard Avoidance. During the active season (April 15 through October 15), in areas where blunt-nosed leopard lizard or blunt-nosed leopard lizard sign are present, ground-disturbing activities will occur when air temperatures are between 75 and 95 degrees Fahrenheit. The temperature range corresponds to the period when this species is moving around and can avoid danger.

- During the active season 50-foot buffers will be established around active burrows and egg clutch sites. Project-related activities within the buffers will be prohibited until the eggs have hatched, as determined by the Project Biological Monitor(s).
- During the non-active season (October 16 through April 14), suitable blunt-nosed leopard lizard burrows identified during protocol-level and preconstruction surveys will be avoided during construction activities. If construction activities are required during this period, appropriate measures will be established through consultation with the USFWS and CDFG.

Fish

The common mitigation measures (Bio-MM#1 through Bio-MM#15) will directly and/or indirectly reduce impacts and effects on special-status fish species. The common mitigation measures will be implemented during the construction period as applicable.

Birds

The common mitigation measures (Bio-MM#1 through Bio-MM#15) and project-period mitigation measures (Bio-MM#56 and Bio-MM#57) will directly and/or indirectly reduce impacts and effects on special-status bird species including those protected under the MBTA and/or listed as species of special concern (SSC) by the CDFG. These mitigation measures will be implemented during project operation as applicable. In addition, the following species-specific mitigation measures are proposed for implementation during the construction period.

Bio-MM#27. Delineate Active Nest Exclusion Areas for Other Breeding Birds. In the event active bird nests are encountered during the preconstruction survey, establish nest avoidance buffer zones as appropriate. Establish suitable buffer distances consistent with the intent of the MBTA. Delineate nest avoidance buffers established for ground-nesting birds in a manner that does not create predatory bird perch points in close proximity (150 feet) to the active nest site. Periodically monitor active bird nests. Maintain the nest avoidance buffer zone until nestlings have fledged or the nest is abandoned.

Bio-MM#28. Conduct Preconstruction Surveys and Monitoring for Raptors. Prior to ground-disturbing activities, conduct visual preconstruction surveys where suitable habitats are present for nesting raptors if construction and habitat removal activities are scheduled to occur during the bird breeding season (February 1 to August 15). Conduct surveys in areas within the construction footprint and, where permissible, within 300 feet of the construction footprint. Modify the required survey dates based on local conditions. If breeding raptors with active nests are found, establish a 300-foot buffer around the nest and phase construction activities within the buffer(s) until the young have fledged from the nest or the nest fails. Adjustments to the buffer(s) will require prior approval by USFWS and/or CDFG.

Bio-MM#29. Raptor Protection on Power Lines. During Final Design, verify that the catenary system and masts will be designed to be raptor-safe in accordance *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC 2006).

Swainson's Hawks

Bio-MM#30. Conduct Preconstruction Surveys for Swainson's Hawks. Conduct preconstruction surveys for Swainson's hawks during the nesting season (March 1 through September 15) within the construction footprint and within a 0.5-mile buffer. Conduct the preconstruction nest surveys at least 30 days prior to ground-disturbing activities and phase with project build out. The preconstruction surveys will determine the status (i.e., active, inactive) of the nest.

Bio-MM#31. Swainson's Hawk Nest Avoidance. If active Swainson's hawk nests (defined as a nest used one or more times in the last 5 years) are found within 0.5 mile of the construction footprint during the nesting season (March 1 to September 15), implement buffers restricting construction activities according to CDFG's *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks* (*Buteo swainsoni*) *in the Central Valley of California* (CDFG 1994). Adjustments to the buffer(s) will require prior approval by CDFG.

Bio-MM#32. Monitor Removal of Nest Trees for Swainson's Hawks. Prior to ground-disturbing activities, monitor nest trees for Swainson's hawks in the construction footprint that are not removed. If a nest tree for a Swainson's hawk must be removed, obtain a Management Authorization (including conditions to offset the loss of the nest tree) from the CDFG, as described in CDFG's *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks* (*Buteo swainsoni*) *in the Central Valley of California* (CDFG 1994).

Burrowing Owls

Bio-MM#33. Conduct Protocol Surveys for Burrowing Owls. Prior to ground-disturbing activities conduct protocol-level surveys in accordance with CDFG's *Staff Report on Burrowing Owl Mitigation* (CDFG 1995). Conduct the protocol-level surveys during the winter (December 1 through January 31) and breeding season (April 15 through July 15). Conduct these surveys within suitable habitat of the construction footprint and within a 500-foot buffer.

Bio-MM#34. Burrowing Owl Avoidance and Minimization. Implement burrowing owl avoidance and minimization measures following CDFG's *Staff Report on Burrowing Owl Mitigation* (CDFG 1995). Do not disturb occupied burrowing owl burrows during the nesting season (February 1 through August 31) unless it is verified that either the birds have not begun egg-laying and incubation, or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Eviction outside the nesting season may be permitted pending evaluation of eviction plans and receipt of formal written approval from the CDFG authorizing the eviction.

Unless otherwise authorized by CDFG, establish a 250-foot buffer (as an Environmentally Sensitive Area) between the construction work area and nesting burrowing owls during the nesting season. Maintain this protected area until August 31 or a time set at CDFG's discretion and based upon monitoring evidence, until the young owls are foraging independently.

Unless otherwise authorized by CDFG, establish a 160-foot buffer (as an Environmentally Sensitive Area) between the construction work area and occupied burrows during the non-breeding season (September 1 through January 31). Maintain this protected area until January 31 or at CDFG's discretion and based upon monitoring evidence, until the young owls are foraging independently.

If burrowing owls must be moved away from the project area, undertake passive relocation measures in accordance with CDFG's (1995) guidelines.

Mammals

The common mitigation measures (Bio-MM#1 through Bio-MM#15) and mitigation measures (Bio-MM#58) will directly and/or indirectly reduce impacts and effects on special-status mammals and will be implemented during the construction period as applicable. The following species-specific mitigation measures are proposed during construction period impacts.

Nelson's Antelope Squirrel, Fresno Kangaroo Rat, Tipton Kangaroo Rat, Dulzura Pocket Mouse, Tulare Grasshopper Mouse

Bio-MM#35. Conduct Preconstruction Surveys for Nelson's Antelope Squirrel, Fresno Kangaroo Rat, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse. Prior to ground-disturbing activities, install a non-disturbance exclusion fence (e.g., silt fence, or similar material) 250 feet from areas containing suitable habitat (e.g., alkali desert scrub, pasture, and annual grassland) and/or signs of Nelson's antelope squirrel, Fresno kangaroo rat, Tipton kangaroo rat, Dulzura pocket mouse, or Tulare grasshopper mouse. The fencing will be installed under the supervision of a qualified biologist (as designated by the Project Biologist). The silt fence will be placed to exclude the special-status small mammals from the construction area. Small-mammal trapping surveys will be conducted by a USFWS- and/or CDFG-approved biologist inside the exclusion fence to determine whether the special-status small-mammal species are present, and if so, which ones. These surveys will be conducted no more than 30 days prior to the start of ground-disturbing activities and phased with project build out, or as determined through consultation with the USFWS and CDFG.

In the unlikely event that a Fresno kangaroo rat is found in the construction footprint, the USFWS and CDFG will be notified and Section 7 Consultation will be reinitiated.

Bio-MM#36. Small-Mammal Avoidance and Minimization. If special-status mammal individuals, active burrows, or diagnostic signs are found within the project area during small-mammal trapping surveys and cannot be avoided by a 250-foot non-disturbance buffer, trapped individuals will be relocated by a USFWS/CDFG-approved biologist to a suitable location determined in consultation with USFWS and CDFG, or other methods will be identified to promote passive relocation. The relocation efforts will be developed in consultation with the USFWS and CDFG and may include the removal of vegetation, construction of artificial burrows, and monitoring.

Special-Status Bats

Bio-MM#37. Conduct Preconstruction Surveys for Special-Status Bat Species. Prior to ground-disturbing activities, conduct a visual and acoustic preconstruction survey for roosting bats. Include a minimum of one day and one evening in the visual preconstruction survey. Contact CDFG if any hibernation roosts or active nurseries are identified within or immediately adjacent to the construction footprint, as appropriate.

Bio-MM#38. Bat Avoidance and Relocation. During ground-disturbing activities, if active or hibernation roosts are found, avoid, if feasible, for the period of activity. If avoidance of the hibernation roost is not feasible, prepare a relocation plan and coordinate the construction of an alternative bat roost with CDFG. Implement the Bat Roost Relocation Plan prior to the commencement of construction activities.

Remove roosts with approval from CDFG before hibernation begins (October 31), or after young are flying (July 31), using exclusion and deterrence techniques described in Bio-MM#39, below. The timeline to remove vacated roosts is between August 1 and October 31. All efforts to avoid disturbance to maternity roosts will be made during construction activities.

Bio-MM#39. Bat Exclusion and Deterrence. During ground-disturbing activities, if non-breeding or non-hibernating individuals or groups of bats are found within the construction footprint, the bats will be safely excluded by either opening the roosting area to change lighting and airflow conditions, or by installing one-way doors, or other appropriate methods specified by CDFG. Leave the roost undisturbed by project-related activities for a minimum of one week after implementing exclusion and/or eviction activities. Do not implement exclusion measures to evict bats from established maternity roosts or occupied hibernation roosts.

American Badger

Bio-MM#40. Conduct Preconstruction Surveys for American Badger. Prior to ground-disturbing activities, conduct preconstruction surveys for American badger den sites within suitable habitats in the construction footprint. Conduct these surveys no more than 30 days before the start of ground-disturbing activities and phase with project build out.

Bio-MM#41. American Badger Avoidance. Establish a 50-foot buffer around occupied badger dens. Establish a 200-foot buffer around badger maternity dens through the pup-rearing season (February 15 through July 1). Adjustments to the buffer(s) will require prior approval by CDFG.

San Joaquin Kit Fox

Bio-MM#42. Conduct Preconstruction Surveys for San Joaquin Kit Fox. Prior to the start of ground-disturbing activities, conduct preconstruction surveys in accordance with USFWS' *San Joaquin Kit Fox Survey Protocol for the Northern Range* (USFWS 1999b) by a qualified biologist.

Bio-MM#43. Minimize Impacts on San Joaquin Kit Fox. Implement USFWS' *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011) to minimize ground disturbance-related impacts to this species.

Habitats of Concern

In addition to the common mitigation measures (Bio-MM#1 through Bio-MM#15) that apply to all biological resources, specific measures will be implemented to avoid and/or minimize impacts on habitat of concern, including special-status plant communities, jurisdictional waters, conservation areas, and protected trees. As applicable, mitigation measures (Bio-MM#59 through Bio-MM#62) may also reduce the impact to habitats of concern during construction period impacts. Furthermore, in some instances mitigation measures associated with special-status species and wildlife movement corridors during the construction period and/or project operation may also directly or indirectly avoid and/or minimize impacts and effects to habitats of concern.

The section presents the mitigation measures that will be implemented to avoid and minimize impacts and effects to habitats of concern during construction period impacts and is organized into the following subheadings: special-status plant communities, jurisdictional waters, conservation areas, and protected trees.

Special-Status Plant Communities

The implementation of the applicable common mitigation measures (Bio-MM#1 through Bio-MM#15), and other construction period and project operation mitigation measures pertaining to special-status plant species, special-status plant communities, and jurisdictional waters (Bio-MM#16, Bio-MM#51 and Bio-MM#59 through Bio-MM#61) will directly or indirectly reduce impacts and effects on special-status plant communities during the construction period. In addition, the following resource-specific mitigation measure is proposed to be implemented during construction.

Bio-MM#44. Restore Temporary Riparian Impacts. During post-construction, the Contractor would revegetate all disturbed riparian areas using appropriate plants and seed mixes, and monitor restoration activities consistent with provisions in the Habitat Mitigation and Monitoring Plan (HMMP).

Jurisdictional Waters

The implementation of the applicable common mitigation measures (Bio-MM#1 through Bio-MM#15), and jurisdictional waters mitigation measures (Bio-MM#60 and Bio-MM#61) will also directly or indirectly reduce impacts and effects on jurisdictional waters during construction period impacts. In addition, the following resource-specific mitigation measures are proposed during construction period impacts.

Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. During or post-construction restore disturbed jurisdictional waters to original topography using stockpiled and segregated soils. Conduct revegetation using appropriate plants and seed mixes, and conduct maintenance monitoring consistent with the provisions in the HMMP.

Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. During ground-disturbing activities, conduct monitoring within and adjacent to jurisdictional waters, including monitoring of the installation of protective devices (silt fencing, sandbags, fencing, etc.), installation and/or removal of creek crossing fill, construction of access roads, vegetation removal, and other associated construction activities. Biological monitoring will be conducted to document adherence to habitat avoidance and minimization measures addressed in the project mitigation measures and as listed in the USFWS, CDFG, RWQCB, and USACE permits conditions.

Critical Habitat

Coordinate with the USFWS related to threatened and endangered species, including critical habitat, occupied habitat, and suitable habitat for special-status species. The individual mitigation measures addressed for special-status species are anticipated to result in compliance with appropriate mitigation for vernal pool fairy shrimp critical habitat.

Conservation Areas

The common mitigation measures (Bio-MM#1 through Bio-MM#15) and other mitigation measures pertaining to the special-status species, habitats of concern, and wildlife movement and migration will also directly or indirectly reduce impacts and effects on conservation areas including (e.g., Allensworth Ecological Reserve).

Protected Trees

The common mitigation measures (Bio-MM#1 through Bio-MM#15) and mitigation measure for protected trees (Bio-MM#62) will also directly and/or indirectly reduce impacts and effects on protected trees during construction period impacts. In addition, the following resource-specific mitigation measure is proposed during construction period impacts.

Bio-MM#47. Monitoring of Protected Trees. Prior to, during, and post-construction, implement the following methods to preserve and/or mitigate for impacts on protected trees:

- Conduct preconstruction surveys to evaluate the condition of all protected trees found within areas directly and indirectly affected by the HST Fresno to Bakersfield Section.
- Compensate for impacts and effects to protected tree resources, including removal or trimming of naturally occurring native protected trees and landscape or ornamental trees (See Bio-MM#62, Compensate for Impacts to Protected Trees).
- Fence protected trees, which may be indirectly affected by construction activities, 5 feet from their drip lines to form exclusion zones.

- Prepare and implement a monitoring and maintenance program that monitors transplanted trees for re-establishment of root systems.

Wildlife Movement Corridors

The common mitigation measures (Bio-MM#1 through Bio-MM#15) that apply to all biological resources and specific measures will be implemented to avoid and/or minimize impacts and effects on wildlife movement corridors. As applicable, mitigation measures (Bio-MM#63 and Bio-MM#64) will also reduce the impact to wildlife movement corridors during construction period impacts. Furthermore, in some instances mitigation measures associated with special-status species and habitats of concern during construction period impacts and project impacts may also directly or indirectly avoid and/or minimize impacts and effects to wildlife movement corridors.

As discussed in Section 2 (Alternatives), wildlife crossing opportunities would be available through a variety of engineered structures, including dedicated wildlife crossing structures, viaducts, bridges over riparian corridors, road overcrossings and undercrossings, and drainage facilities (i.e., large-diameter [60–120 inches] culverts and paired 30-inch culverts).

This section presents the mitigation measures that will be implemented to avoid and minimize impacts and effects to wildlife movement corridors during the construction period.

Bio-MM#48. Wildlife Corridor Undercrossing (Implementation). During ground-disturbing activities, install wildlife corridor undercrossing(s) at the designated locations shown on the construction drawings. Check the installation for consistency with final design.

Bio-MM#49. Install Wildlife Fencing. Prior to operation of the HST, install permanent mammal-proof fencing along portions of the project that are adjacent to wildlife movement corridors consistent with the final designs. Verify the installation is consistent with the designated terms and conditions in the applicable permits.

Bio-MM#50. Construction in Wildlife Movement Corridors. Before ground-disturbing activities, submit a construction avoidance and minimization plan for wildlife movement linkages (e.g., SR 43–Garces Highway and Deer Creek–Sand Ridge linkages) to the Project Biologist for concurrence. During ground-disturbing activities, the Contractor will keep the wildlife movement linkages (e.g., SR 43–Garces Highway and Deer Creek–Sand Ridge linkages) free of all equipment, storage materials, construction materials, and any significant potential impediments. Minimize ground-disturbing activities within the wildlife linkages (e.g., SR 43–Garces Highway and Deer Creek–Sand Ridge linkages) during nighttime hours to the extent practicable. In addition, keep nighttime illumination (e.g., for security) from spilling into the linkages or shield nighttime lighting to avoid illumination spilling into the linkages.

C. PROJECT-RELATED MITIGATION MEASURES

Special-Status Species

In addition to the common mitigation measures (Bio-MM#1 through Bio-MM#15) that apply to all biological resources, specific measures will be implemented to avoid and/or minimize project-related impacts and effects on special-status species. As applicable, mitigation measures (Bio-MM#16 through Bio-MM#50) may also reduce the impact to special-status species during project operation. Furthermore, in some instances mitigation measures associated with habitats of concern and wildlife movement corridors during the construction period or project operation may also directly or indirectly avoid or minimize impacts and effects on special-status species.

The section presents project-related impact mitigation measures that will be implemented to avoid and minimize impacts and effects to special-status species and is organized by species

guild. The mitigation ratios presented in this section are proposed as a minimum to compensate for project-related impacts; final ratios will be determined in consultation with appropriate agencies.

Special-Status Plant Species

The implementation of the applicable common mitigation measures (Bio-MM#1 through Bio-MM#15), and special-status plant mitigation measures (Bio-MM#16 and Bio-MM#17), will also directly or indirectly reduce impacts and effects on special-status plant species, as applicable. In addition, the following species-specific mitigation measure for project impacts is proposed.

Bio-MM#51. Compensate for Impacts on Special-Status Plant Species. Prior to final design and during the permitting process, comply with CESA and the federal ESA by implementing the following measures:

- Purchase credits from an existing mitigation bank or conduct a special-status plant re-establishment program within the same watershed or in proximity to the impact area at a 1:1 ratio.
- Mitigate the impacts on special-status plants in accordance with the USFWS Biological Opinion and/or CFGC section 2081(b).

Special-Status Wildlife Species

Invertebrates

The implementation of the applicable common mitigation measures (Bio-MM#1 through Bio-MM#15), invertebrate mitigation measures (Bio-MM#18 through Bio-MM#21), and other mitigation measures pertaining to the jurisdictional waters (including vernal pools) and special-status plant communities (including riparian areas) will also directly or indirectly reduce project-related impacts and effects on special-status invertebrate species, as applicable. In addition, the following species-specific mitigation measures are proposed during project operation.

Vernal Pool Branchiopods

Bio-MM#52. Compensate for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp. Mitigate direct and indirect impacts, including temporary and permanent, on vernal pool branchiopod habitat through compensation determined in consultation with the USFWS and USACE. Compensation for vernal pool branchiopods habitat (e.g., vernal pools, seasonal wetlands) are addressed under compensation for impacts on jurisdictional waters (Bio-MM#61).

Valley Elderberry Longhorn Beetle

Bio-MM#53. Implement Conservation Guidelines During Project Operation for Valley Elderberry Longhorn Beetle. Conduct compensatory mitigation for the valley elderberry longhorn beetle, including transplantation and replacement of elderberry shrubs, and maintenance for replacement shrubs following the USFWS' *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (USFWS 1999a).

Reptiles and Amphibians

The common mitigation measures (Bio-MM#1 through Bio-MM#15) and mitigation measures developed for implementation (Bio-MM#22 through Bio-MM#26) during project operation will directly and/or indirectly reduce impacts and effects on reptiles and amphibians and will be

implemented during project operation as applicable. In addition, the following species-specific mitigation measures are proposed to be implemented during project operation.

California Tiger Salamander

Bio-MM #54. Compensate for Impacts on California Tiger Salamander. Determine compensatory mitigation for the temporary and permanent loss of suitable upland and aquatic breeding habitat through agency consultation with the USFWS and CDFG. Compensatory mitigation could include one of the following:

- Purchase of credits from an agency-approved mitigation bank.
- Fee-title-acquisition of natural resource regulatory agency-approved property.
- Purchase or establishment of a conservation easement with an endowment for long-term management of the property-specific conservation values.
- In-lieu fee contribution determined through negotiation and consultation with USFWS.

Blunt-Nosed Leopard Lizard, Tipton Kangaroo Rat, and Nelson's Antelope Squirrel

Bio-MM#55. Compensate for Impacts on Blunt-Nosed Leopard Lizard, Tipton Kangaroo Rat, and Nelson's Antelope Squirrel. To offset the permanent and temporary loss of suitable habitat for the blunt-nosed leopard lizard, Tipton kangaroo rat, and Nelson's antelope squirrel, compensatory mitigation will be determined in consultation with the USFWS and/or CDFG and could include one of the following:

- Purchase of credits from an agency-approved mitigation bank.
- Fee-title-acquisition of natural resource regulatory agency-approved property.
- Purchase or establishment of a conservation easement with an endowment for long-term management of the property-specific conservation values.
- In-lieu fee contribution determined through negotiation and consultation with USFWS.

Fish

The common mitigation measures (Bio-MM#1 through Bio-MM#15) will directly and/or indirectly reduce impacts and effects on special-status fish species. The common mitigation measures will be implemented during project operation as applicable.

Birds

The common mitigation measures (Bio-MM#1 through Bio-MM#15) and construction period mitigation measures (Bio-MM#27 through Bio-MM#34) will directly and/or indirectly reduce impacts and effects on special-status bird species including those protected under the MBTA and/or listed as SSC by the CDFG. These mitigation measures will be implemented during the construction period as applicable. In addition, the following species-specific mitigation measures are proposed for implementation during project operation.

Swainson's Hawks

Bio-MM#56. Compensate for Loss of Swainson's Hawk Foraging Habitat. To compensate for the loss of Swainson's hawk foraging habitat, provide compensatory mitigation that follows the ratios recommended by CDFG's (1994) *Staff Report Regarding Mitigation for*

Impacts to Swainson's Hawks (Buteo swainsoni) in the Central Valley. The ratios are based on the distance from the project footprint to the closest active nest site (which for this species is defined as a nest used one or more times in the last 5 years), as follows:

- Compensate where impacts on foraging habitat occur within 1 mile of an active nest tree, at a 1:1 ratio on agricultural lands or other suitable foraging habitat; or at a 0.5:1 ratio where habitat can be managed for prey production.
- Compensate where impacts on foraging habitat occur within 5 miles but more than 1 mile from an active nest tree, at a 0.75:1 ratio.
- Compensate where impacts on foraging habitat occur within 10 miles but more than 5 miles from an active nest tree, at a 0.5:1 ratio.

Burrowing Owls

Bio-MM#57. Compensate for Loss of Burrowing Owl Foraging and Breeding Habitat.

Base compensatory mitigation for the permanent and temporary loss of foraging and breeding habitat on the number of western burrowing owl pairs or individuals affected. Compensation will be at a 6.5:1 ratio (acres of habitat: number of pairs or individuals). Mitigate each occupied burrow destroyed by enlarging or enhancing existing unsuitable burrows at a 2:1 ratio based on CDFG's (1995) *Staff Report on Burrowing Owl Mitigation*.

Mammals

The common mitigation measures (Bio-MM#1 through Bio-MM#15) and mitigation measures (Bio-MM#35 through Bio-MM#43) will directly and/or indirectly reduce impacts and effects on mammals and will be implemented during project operation as applicable. In addition, the following species-specific mitigation measures are proposed for implementation during project operation.

San Joaquin Kit Fox

Bio-MM#58. Compensate for Destruction of Natal Dens. Mitigate the destruction of San Joaquin kit fox natal dens by the purchase of suitable, approved habitat (USFWS and CDFG). Replace habitat at a minimum of a 1:1 ratio in order to provide additional protection and habitat in a location that is consistent with the recovery of the species. Mitigate the impacts on San Joaquin kit fox in accordance with the USFWS Biological Opinion and/or CDFG 2081(b).

Habitats of Concern

In addition to the common mitigation measures (Bio-MM#1 through Bio-MM#15) that apply to all biological resources, specific measures will be implemented to avoid and/or minimize impacts and effects on habitat of concern, including special-status plant communities, jurisdictional waters, conservation areas, and protected trees during project operation. As applicable, mitigation measures (Bio-MM#44 through Bio-MM#47) may also reduce the impact to habitats of concern during construction. Furthermore, in some instances mitigation measures associated with special-status species and wildlife movement corridors during the construction period and/or project operation may also directly or indirectly avoid and/or minimize impacts and effects on habitats of concern.

The section presents the mitigation measures that will be implemented during project operation to avoid, minimize, and compensate for impacts and effects to habitat of concern, and is organized into the following subheadings: special-status plant communities, jurisdictional waters, critical habitat, conservation areas, and protected trees.

Special-Status Plant Communities

The implementation of the applicable common mitigation measures (Bio-MM#1 through Bio-MM#15), and special-status plant species and special-status plant communities mitigation measures (Bio-MM#16, Bio-MM#17, and Bio-MM#44), and other mitigation measures pertaining to the jurisdictional waters (including vernal pools) will also directly or indirectly reduce impacts and effects on special-status plant communities during project operation, as applicable. In addition, the following species-specific mitigation measure is proposed to be implemented during project operation.

Bio-MM#59. Compensate for Permanent Riparian Impacts. Compensate for permanent impacts on riparian habitats (i.e., valley foothill riparian), as determined in consultation with the appropriate agencies (e.g., CDFG), by restoring nearby areas to suitable habitat and/or by purchasing credits in a mitigation bank. The HMMP will provide the planning details. Compensation will be based on the following ratios (acres of mitigation to acres of impact), pending agency confirmation:

- Valley Foothill Riparian: 2:1.

Jurisdictional Waters

The implementation of the applicable common mitigation measures (Bio-MM#1 through Bio-MM#15), and jurisdictional waters mitigation measures (Bio-MM#45 and Bio-MM#46) will also directly or indirectly reduce impacts and effects on jurisdictional waters during project operation. In addition, the following species-specific mitigation measure is proposed to be implemented during project operation.

Bio-MM#60. Prepare and Implement a Habitat Mitigation and Monitoring Plan. As part of the USFWS, USACE, RWQCB, and CDFG permit applications and prior to ground-disturbing activities, prepare an HMMP to mitigate for temporary and permanent impacts on jurisdictional waters and state streambeds. In the HMMP, detail the acreage basis, restoration ratios, and the combination of onsite and/or offsite mitigation; give preference to conducting the mitigation within the same watershed where the impact occurs. Work with the USACE, RWQCB, and CDFG to develop appropriate avoidance, minimization, mitigation, and monitoring measures to be incorporated into the HMMP. In the HMMP, outline the intent to mitigate for the lost functions and values of impacts on jurisdictional waters and state streambeds consistent with resource agency requirements and conditions presented in Sections 404 and 401 of the CWA and Section 1600 of the CFGC. In the HMMP, incorporate the following standard requirements consistent with USACE, RWQCB, and CDFG guidelines:

- Description of the project impact/site.
- Goal(s) (i.e., functions and values) of the compensatory mitigation project.
- Description of the proposed compensatory mitigation site.
- Implementation plan for the proposed compensatory mitigation site.
- Maintenance activities during the monitoring period.
- Monitoring plan for the compensatory mitigation site.
- Completion of compensatory mitigation.
- Contingency measures.

Where the HST alignment affects an existing mitigation bank, modify the mitigation ratio to meet the vernal pool mitigation requirement. Relocate the affected portion of the mitigation bank or compensate the landowner in accordance with the Uniform Relocation and Real Property Policy Act of 1970, as amended.

Conduct monitoring within and adjacent to state streambeds, including monitoring of the installation of protective devices (silt fencing, sandbags, fencing, etc.), installation and/or removal of creek-crossing fill, construction of access roads, vegetation removal, and other associated construction activities. Conduct biological monitoring to document adherence to habitat avoidance and minimization measures addressed in the project mitigation measures and listed in the USFWS, CDFG, and USACE permit conditions.

Oversee the implementation of all HMMP elements and monitor consistent with the prescribed maintenance and performance monitoring requirements.

Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters. Mitigate permanent and temporary wetland impacts through compensation determined in consultation with the USACE, RWQCB, USFWS, and CDFG, in order to be consistent with the HMMP. Compensation could include one of the following:

- Purchase of credits from an agency-approved mitigation bank.
- Fee-title-acquisition of natural resource regulatory agency-approved property.
- Purchase or establishment of a conservation easement with an endowment for long-term management of the property-specific conservation values.
- In-lieu fee contribution determined through negotiation and consultation with the various natural resource regulatory agencies.

Base compensation for permanent impacts on the following ratios (acres of mitigation to acres of impact), pending agency confirmation:

- Vernal Pools: 2:1 Preservation and 1:1 Creation.
- Other Wetlands: Between 1.1:1 and 1.5:1 (1:1 onsite and 0.1 to 0.5:1 offsite), based on function and values temporarily lost.
- Ratios determined in consultation with the appropriate agencies.

Modify the vernal pool mitigation ratio in the final permits based on site-specific conditions and the specific life history requirements of vernal pool branchiopods, California tiger salamander, and western spadefoot toad.

Where the HST Alternative affects existing conservation area (e.g., Allensworth ER), modify the mitigation ratio to meet the vernal pool mitigation requirement. Relocate the affected portion of the conservation area or provide compensation to the holder of Allensworth ER in accordance with the Uniform Relocation and Real Property Policy Act of 1970, as amended.

Critical Habitat

Coordinate with the USFWS related to threatened and endangered species, including critical habitat, occupied habitat, and suitable habitat for special-status species. No direct or indirect impacts on designated vernal pool fairy shrimp critical habitat with suitable required habitat characteristics (i.e., Primary Constituent Elements—those physical and biological features of a landscape that a species needs to survive and reproduce) are expected as a result of project activities. Only areas that contain the Primary Constituent Elements required by the species are considered critical habitat by USFWS. The common mitigation measures (Bio-MM#1 through Bio-MM#15) and resource-specific mitigation measures addressed for special-status species (Bio-MM#18 through Bio-MM#21, and Bio-MM#52) will be implemented, as required, in vernal-pool-fairy-shrimp-designated Critical Habitat Unit 27B. Therefore, no specific compensatory

mitigation is proposed to offset the loss of designated Critical Habitat Unit 27B for the vernal pool fairy shrimp.

Conservation Areas

The common mitigation measures (Bio-MM#1 through Bio-MM#15) and other mitigation measures pertaining to the special-status species, habitats of concern, and wildlife movement corridors will also directly or indirectly reduce impacts and effects on conservation areas (e.g., Allensworth Ecological Reserve).

Protected Trees

The common mitigation measures (Bio-MM#1 through Bio-MM#15) and mitigation measure for protected trees (Bio-MM#47) will also directly and/or indirectly reduce impacts and effects on protected trees during project operation. In addition, the following species-specific mitigation measure is proposed to be implemented during project operation.

Bio-MM#62. Compensate for Impacts to Protected Trees. Compensate for impacts, including removal or trimming of naturally occurring native protected trees and landscape or ornamental trees, through one of the following:

- Transplant all directly affected protected trees that are judged by an arborist to be in good condition to a suitable site outside the zone of impact.
- Replace directly affected protected trees at an onsite or offsite location, based on the number of protected trees removed, at a ratio not to exceed 3:1 for native trees or 1:1 for landscape or ornamental trees.
- Contribute to a tree-planting fund.

Wildlife Movement Corridors

In addition to the common mitigation measures (Bio-MM#1 through Bio-MM#15) that apply to all biological resources, specific measures will be implemented to avoid and/or minimize impacts and effects on wildlife movement corridors during project operation. As applicable, construction period mitigation measures (Bio-MM#48 through Bio-MM#50) may also reduce the impact on wildlife movement corridors during project operation. Furthermore, in some instances mitigation measures associated with special-status species and habitats of concern during the construction period and/or project operation may also directly or indirectly avoid and/or minimize impacts and effects to wildlife movement corridors.

As discussed in Chapter 2, wildlife crossing opportunities would be available through a variety of engineered structures, including dedicated wildlife crossing structures, viaducts, bridges over riparian corridors, road overcrossings and undercrossings, and drainage facilities (i.e., large-diameter [60–120 inches] culverts and paired 30-inch culverts).

This section presents the mitigation measures that will be implemented to avoid and minimize impacts and effects to wildlife movement corridors during project operation.

Bio-MM#63. Wildlife Corridor Artificial Dens. To prevent predation by larger predators (e.g., coyotes, bobcats, red foxes, and dogs) at wildlife undercrossings, install artificial dens at each dedicated wildlife crossing structure to provide escape cover for wildlife (e.g., San Joaquin kit foxes).

Bio-MM#64. Monitoring and Reporting Wildlife Corridor Undercrossings. During final design, prepare the Wildlife Corridor Monitoring Program, which will document wildlife usage of

the undercrossing(s) during operation of the project. Monitor and report the wildlife usage of the designated undercrossing consistent with the methods identified in the Wildlife Corridor Monitoring Program.

3.7.7 NEPA Impacts Summary

Under the No Project Alternative, existing development trends affecting biological resources are expected to continue and potentially further degrade some natural systems. Expanded development in the region would continue to result in direct impacts including habitat loss, mortality from vehicle strikes, and indirect impacts associated with habitat degradation from pollution, noise, and dust impacts on special-status species and habitats, creation of barriers to wildlife movement, habitat fragmentation, and other effects. However, ongoing and future conservation planning and regulatory controls are a mechanism for maintaining a degree of natural heritage with the ongoing development trend.

Construction period impacts associated with the HST alternative alignments, HMF alternatives, and station alternatives would result in the removal of natural habitats that could support special-status species and wetlands and other waters. The majority of the impacts associated with the HST alternative alignments, HMF alternatives, and station alternatives would occur in areas that provide little function and values to biological resources. These areas include urban and agricultural land uses. However, construction period impacts would also result in the removal of natural areas that provide numerous functions and values (e.g., vernal pools, alkali desert scrub), and removal and disturbance of these areas, even if limited, would result in moderate or substantial effects on biological resources. These natural areas are limited in the region and are fragmented; they support a number of special-status species and habitats of concern (including jurisdictional waters) and provide opportunities for regional and localized wildlife movement.

Project impacts associated the HST alternatives would result in effects on biological resources, including special-status species, habitats of concern, and wildlife movement corridors. The implementation of the Corcoran Elevated, Corcoran Bypass, Allensworth Bypass, Wasco-Shafter Bypass, and Bakersfield South alternatives would require the use of the remaining segments of the BNSF Alternative; the effect determinations are the same as those for the BNSF Alternative in most instances. In one case, the anticipated effects to a particular resource are either reduced or magnified by the use of the alternative when combined with the remaining segments of the BNSF Alternative. That is, the use of the Allensworth Bypass Alternative, as opposed to the corresponding segment of the BNSF Alternative, would result in no effect on Allensworth Ecological Reserve.

Construction of all HST alignment alternatives would result in mostly moderate effects on biological resources, including special-status species, habitats of concern, and wildlife movement corridors. However, the following exceptions would apply when the HST alternatives are considered individually:

- The Corcoran Elevated Alternative would have a negligible effect on special-status plant species and special-status plant communities.
- The Corcoran Elevated and Wasco-Shafter Bypass alternatives would result in a negligible effect on jurisdictional waters.
- The Corcoran Elevated and Corcoran Bypass alternatives would have no effect on HCPs.
- The Corcoran Elevated, Corcoran Bypass, Allensworth Bypass, and Wasco-Shafter Bypass alternatives would result in no effect on protected trees.

- The Corcoran Elevated and Wasco-Shafter Bypass alternatives would have no effect on wildlife movement corridors.

Project impacts would result in mostly substantial effects on biological resources, including special-status species, habitats of concern, and wildlife movement corridors. However, the following exceptions would apply when the HST alternatives are considered individually:

- The Kern Council of Governments–Wasco, Kern Council of Governments–Shafter West HMF alternatives, and all station alternatives would have no effect on special-status plant species and special-status plant communities.
- The Corcoran Elevated Alternative and Kern Council of Governments–Shafter East HMF Alternative would have a negligible effect on special-status plant species and special-status plant communities.
- The Fresno HMF and Kings County–Hanford HMF would have a moderate effect on special-status plant species and special-status plant communities.
- The Fresno Station–Kern, Bakersfield Station–North, and Bakersfield Station–South alternatives would have a negligible effect on special-status wildlife species.
- All HMF alternatives and the Kings/Tulare Regional Station and Fresno Station–Mariposa Station alternatives would have a moderate effect on special-status wildlife species.
- The Kern Council of Governments–Shafter West HMF and all station alternatives would have no effect on jurisdictional waters.
- The Corcoran Elevated and Wasco-Shafter Bypass alternatives would result in a negligible effect on jurisdictional waters.
- The Kern Council of Governments–Wasco HMF and Kern Council of Governments–Shafter East HMF alternatives would have a moderate effect on jurisdictional waters.
- All HMF alternatives, all station alternatives, and the Corcoran Elevated, Corcoran Bypass, Allensworth Bypass, Wasco-Shafter Bypass, and Bakersfield South alternatives would have no effect on critical habitat.
- Fresno Works–Fresno HMF, Kings County–Hanford HMF, Kern Council of Governments–Shafter East HMF, Kern Council of Governments–Shafter West HMF, Fresno Station–Mariposa, Fresno Station–Kern, and Kings/Tulare Regional Station would have no effect on recovery plans.
- Bakersfield Station–North and Bakersfield Station–South would have a moderate effect on recovery plans.
- All HMF alternatives, all station alternatives, and the Corcoran Elevated, Corcoran Bypass, Allensworth Bypass, Wasco-Shafter Bypass, and Bakersfield South alternatives would have no effect on Allensworth Ecological Reserve.
- The Corcoran Elevated, Corcoran Bypass alternatives as well as the Fresno Works–Fresno HMF, Kings County–Hanford HMF, Fresno Station–Mariposa, Fresno Station–Kern, and Kings/Tulare Regional Station would have no effect on HCPs.
- The Corcoran Elevated and Allensworth Bypass alternatives as well as Kings County–Hanford HMF, Kern Council of Governments–Wasco HMF, Kern Council of Governments–Shafter East

HMF, Kern Council of Governments–Shafter West HMF, and Kings/Tulare Regional Station would have no effect on protected trees.

- The Corcoran Bypass Alternative, Fresno Station–Kern, and Bakersfield Station–South would have a negligible effect on protected trees.
- The Fresno Station–Mariposa and Bakersfield Station–North would have a moderate effect on protected trees.
- The Corcoran Elevated and Wasco-Shafter Bypass alternatives would have no effect on wildlife movement corridors.
- The Fresno Works–Fresno HMF, Kings County–Hanford HMF, Kern Council of Governments–Shafter East HMF, Kern Council of Governments–Shafter West HMF and all station alternatives would have a negligible effect on wildlife movement corridors.
- The Bakersfield South Alternative would have a moderate effect on wildlife movement corridors.

Through the implementation of mitigation measures, construction period impacts and project impacts to special-status species and habitats of concern would be reduced to negligible under NEPA. However, although the implementation of mitigation measures would incrementally reduce project impacts to wildlife movement corridors, the overall impact would remain substantial under NEPA.

3.7.8 CEQA Significance Conclusions

Table 3.7-18 provides a summary of impacts associated mitigation measures and the level of significance after mitigation. Mitigation fundamental to reducing an impact is summarized; other measures that support the mitigation effect are listed by number.

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
COMMON MITIGATION MEASURES			
The following mitigation measures effectively mitigate impacts to multiple biological resources (e.g., special-status species and wildlife movement corridors). Common mitigation measures apply to many of the construction period and project impact categories.	N/A	Bio-MM#1. Designate Project Biologist(s), Contractor's Biologist(s), and Project Biological Monitor(s). Bio-MM#2. Regulatory Agency Access. Bio-MM#3. Prepare and Implement a Worker Environmental Awareness Program. Bio-MM#4. Prepare and Implement a Weed Control Plan. Bio-MM#5. Prepare and Implement a Biological Resources Management Plan. Bio-MM#6. Prepare and Implement a Restoration and Revegetation Plan. Bio-MM#7. Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in-field). Bio-MM#8. Wildlife-Exclusion Fencing. Bio-MM#9. Equipment Staging Areas. Bio-MM#10. Mono-Filament Netting. Bio-MM#11. Vehicle Traffic. Bio-MM#12. Entrapment Prevention. Bio-MM#13. Work Stoppage. Bio-MM#14. "Take" Notification and Reporting. Bio-MM#15. Post-Construction Compliance Reports.	N/A
CONSTRUCTION PERIOD IMPACTS			
Special-Status Plants			
Bio#1: Construction of the HST alternatives would directly or indirectly impact suitable habitat that has potential to support special-status plant species. <i>Refer to Appendix 3.7-B, Attachment 1.</i>	Significant	AQ-MM#1. Reduce Fugitive Dust by Watering. AQ-MM#3. Reduce Fugitive Dust from Material Hauling. Bio-MM#16. Conduct Preconstruction Surveys for Special-Status Plant Species and Special-Status Plant Communities. Bio-MM#17. Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species. Bio-MM#51. Compensate for Impacts on Special-Status Plant Species. WR-MM#1. Construction Stormwater Pollution Prevention Plan.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Special-Status Wildlife Species			
Bio#2: Construction of the HST alternatives would disturb suitable habitat that has potential to support special-status invertebrate species. Refer to Appendix 3.7-B, Attachment 2.	Significant	AQ-MM#1. Reduce Fugitive Dust by Watering. AQ-MM#3. Reduce Fugitive Dust from Material Hauling. Bio-MM#18. Conduct Preconstruction Surveys for Vernal Pool Fauna. Bio-MM#19. Seasonal Vernal Pool Work Restriction. Bio-MM#20. Implement and Monitor Vernal Pool Protection. Bio-MM#21. Implement Conservation Guidelines for the Valley Elderberry Longhorn Beetle. Bio-MM#44. Restore Temporary Riparian Impacts. Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#52. Compensate for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp. Bio-MM#53. Implement Conservation Guidelines during project operation for Valley Elderberry Longhorn Beetle. Bio-MM#59. Compensate for Permanent Riparian Impacts. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters. WR-MM#1. Construction Stormwater Pollution Prevention Plan.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Bio#3: Construction of the HST alternatives would disturb the suitable habitat that has potential to support special-status reptiles and amphibian species. <i>Refer to Appendix 3.7-B, Attachment 2.</i>	Significant	Bio-MM#22. Conduct Preconstruction Surveys for Special-Status Reptile and Amphibian Species. Bio-MM#23. Conduct Special-Status Reptile and Amphibian Monitoring, Avoidance, and Relocation. Bio-MM#24. Conduct Protocol-Level Surveys for Blunt-Nosed Leopard Lizard. Bio-MM#25. Conduct Preconstruction Surveys for Blunt-Nosed Leopard Lizard. Bio-MM#26. Blunt-Nosed Leopard Lizard Avoidance. Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM #54. Compensate for Impacts on California Tiger Salamander. Bio-MM#55. Compensate for Impacts on Blunt-Nosed Leopard Lizard, Tipton Kangaroo Rat, and Nelson's Antelope Squirrel. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters.	Less than Significant
Bio#4: Construction of the HST alternatives would disturb habitat that has the potential to support special-status fish (i.e., Kern brook lamprey) species. <i>Refer to Appendix 3.7-B, Attachment 2.</i>	Less than Significant	Bio-MM#44. Restore Temporary Riparian Impacts. Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#59. Compensate for Permanent Riparian Impacts. Bio-MM#60. Prepare and Implement a Habitat Mitigation and Monitoring Plan. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters. WR-MM#1. Construction Stormwater Pollution Prevention Plan. WR-MM#2. Central Valley Regional Water Quality Board, Order No. 5-00-175, Waste Discharge Requirements General Order for Dewatering and Other Low-Threat Discharges to Surface Waters.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Bio#5: Construction of the HST alternatives would disturb suitable habitat that has potential to support nesting special-status bird species (including raptors). <i>Refer to Appendix 3.7-B, Attachment 2.</i>	Significant	Bio-MM#27. Delineate Active Nest Exclusion Areas for Other Breeding Birds. Bio-MM#28. Conduct Preconstruction Surveys and Monitoring for Raptors. Bio-MM#29. Raptor Protection on Power Lines. Bio-MM#30. Conduct Preconstruction Surveys for Swainson's Hawks. Bio-MM#31. Swainson's Hawk Nest Avoidance. Bio-MM#32. Monitor Removal of Nest Trees for Swainson's Hawks. Bio-MM#33. Conduct Protocol Surveys for Burrowing Owls. Bio-MM#34. Burrowing Owl Avoidance and Minimization. Bio-MM#56. Compensate for Loss of Swainson's Hawk Foraging Habitat. Bio-MM#57. Compensate for Loss of Burrowing Owl Foraging and Breeding Habitat.	Less than Significant
Bio#6: Construction of the HST alternatives would disturb or suitable habitat that has the potential to support special-status mammal species. <i>Refer to Appendix 3.7-B, Attachment 2.</i>	Significant	Bio-MM#35. Conduct Preconstruction Surveys for Nelson's Antelope Squirrel, Fresno Kangaroo Rat, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse. Bio-MM#36. Small-Mammal Avoidance and Minimization. Bio-MM#37. Conduct Preconstruction Surveys for Special-Status Bat Species. Bio-MM#38. Bat Avoidance and Relocation. Bio-MM#39. Bat Exclusion and Deterrence. Bio-MM#40. Conduct Preconstruction Surveys for American Badger. Bio-MM#41. American Badger Avoidance. Bio-MM#42. Conduct Preconstruction Surveys for San Joaquin Kit Fox. Bio-MM#43. Minimize Impacts on San Joaquin Kit Fox. Bio-MM#58. Compensate for Destruction of Natal Dens.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
HABITATS OF CONCERN			
Special-Status Plant Communities			
Bio#7: Construction of the HST alternatives would disturb special-status plant communities, and riparian areas.	Significant	Bio-MM#16. Conduct Preconstruction Surveys for Special-Status Plant Species and Special-Status Plant Communities. Bio-MM#44. Restore Temporary Riparian Impacts. Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#51. Compensate for Impacts on Special-Status Plant Species. Bio-MM#59. Compensate for Permanent Riparian Impacts. Bio-MM#60. Prepare and Implement a Habitat Mitigation and Monitoring Plan. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters.	Less than Significant
Jurisdictional Waters			
Bio#8: Construction of the HST alternatives would have direct and indirect impacts on jurisdictional waters.	Significant	Bio-MM#44. Restore Temporary Riparian Impacts. Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#59. Compensate for Permanent Riparian Impacts. Bio-MM#60. Prepare and Implement a Habitat Mitigation and Monitoring Plan. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters. WR-MM#1. Construction Stormwater Pollution Prevention Plan. WR-MM#2. Central Valley Regional Water Quality Board, Order No. 5-00-175, Waste Discharge Requirements General Order for Dewatering and Other Low-Threat Discharges to Surface Waters.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Critical Habitat			
Bio#9: Construction of the BNSF Alternative would disturb critical habitat for vernal pool branchiopods.	Less than Significant	Bio-MM#18. Conduct Preconstruction Surveys for Vernal Pool Fauna. Bio-MM#19. Seasonal Vernal Pool Work Restriction. Bio-MM#20. Implement and Monitor Vernal Pool Protection. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#52. Compensate for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters.	Less than Significant
Conservation Areas			
Bio#10: Construction of the HST alternatives would disturb areas located in USFWS recovery plans.	Significant	Construction and Project Mitigation Measures Bio-MM#16 through Bio-MM#64.	Less than Significant
Bio#11: Construction of the HST alternatives would disturb portions of the Allensworth Ecological Reserve.	No Impact	—	No Impact
Bio#12: Construction of the HST alternatives would disturb portions of habitat conservation plan areas.	Less than Significant	Construction and Project Mitigation Measures Bio-MM#16 through Bio-MM#64.	Less than Significant
Protected Trees			
Bio#13: Construction of the HST alternatives would disturb protected trees.	Significant	Bio-MM#47. Monitoring of Protected Trees. Bio-MM#62. Compensate for Impacts to Protected Trees.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Wildlife Movement Corridors			
Bio#14: Construction of the HST alternatives would result in site preparation activities that would temporarily obstruct or startle wildlife and reduce the functionality of wildlife movement corridors and habitat linkages.	Significant	Bio-MM#48. Wildlife Corridor Undercrossing (Implementation). Bio-MM#49. Install Wildlife Fencing. Bio-MM#50. Construction in Wildlife Movement Corridors. Bio-MM#63. Wildlife Corridor Artificial Dens. Bio-MM#64. Monitoring and Reporting Wildlife Corridor Undercrossings.	Less than Significant
PROJECT IMPACTS			
Special-Status Plant Species			
Bio#15: Project impacts from the HST alternatives would permanently impact special-status plant species or suitable habitat that has potential to these species. <i>Refer to Appendix 3.7-B, Attachment 1.</i>	Significant	AQ-MM#1. Reduce Fugitive Dust by Watering. AQ-MM#3. Reduce Fugitive Dust from Material Hauling. Bio-MM#16. Conduct Preconstruction Surveys for Special-Status Plant Species and Special-Status Plant Communities. Bio-MM#17. Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species. Bio-MM#51. Compensate for Impacts on Special-Status Plant Species. WR-MM#1. Construction Stormwater Pollution Prevention Plan.	Less than Significant
Special-Status Wildlife Species			
Bio#16: Project impacts from the HST alternatives would permanently impact suitable habitat that has the potential to support special-status invertebrate species. <i>Refer to Appendix 3.7-B, Attachment 2.</i>	Significant	AQ-MM#1. Reduce Fugitive Dust by Watering. AQ-MM#3. Reduce Fugitive Dust from Material Hauling. Bio-MM#18. Conduct Preconstruction Surveys for Vernal Pool Fauna. Bio-MM#19. Seasonal Vernal Pool Work Restriction. Bio-MM#20. Implement and Monitor Vernal Pool Protection. Bio-MM#21. Implement Conservation Guidelines for the Valley Elderberry Longhorn Beetle. Bio-MM#44. Restore Temporary Riparian Impacts.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
		Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#52. Compensate for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp. Bio-MM#53. Implement Conservation Guidelines during project operation for Valley Elderberry Longhorn Beetle. Bio-MM#59. Compensate for Permanent Riparian Impacts. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters. WR-MM#1. Construction Stormwater Pollution Prevention Plan.	
Bio#17: Project impacts from the HST alternatives would permanently impact suitable habitat that has the potential to support special-status reptiles and amphibian species. Refer to Appendix 3.7-B, Attachment 2.	Significant	Bio-MM#22. Conduct Preconstruction Surveys for Special-Status Reptile and Amphibian Species. Bio-MM#23. Conduct Special-Status Reptile and Amphibian Monitoring, Avoidance, and Relocation. Bio-MM#24. Conduct Protocol-Level Surveys for Blunt-Nosed Leopard Lizard. Bio-MM#25. Conduct Preconstruction Surveys for Blunt-Nosed Leopard Lizard. Bio-MM#26. Blunt-Nosed Leopard Lizard Avoidance. Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM #54. Compensate for Impacts on California Tiger Salamander. Bio-MM#55. Compensate for Impacts on Blunt-Nosed Leopard Lizard, Tipton Kangaroo Rat, and Nelson's Antelope Squirrel. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Bio#18: Project impacts from the HST alternatives would permanently impact suitable habitat that has the potential to support special-status fish species (i.e., Kern brook lamprey). <i>Refer to Appendix 3.7-B, Attachment 2.</i>	Less than Significant	Bio-MM#44. Restore Temporary Riparian Impacts. Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#59. Compensate for Permanent Riparian Impacts. Bio-MM#60. Prepare and Implement a Habitat Mitigation and Monitoring Plan. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters. WR-MM#1. Construction Stormwater Pollution Prevention Plan. WR-MM#2. Central Valley Regional Water Quality Board, Order No. 5-00-175, Waste Discharge Requirements General Order for Dewatering and Other Low-Threat Discharges to Surface Waters.	Less than Significant
Bio#19: Project impacts from the HST alternatives would permanently impact suitable habitat that has the potential to support special-status bird species (including raptors). <i>Refer to Appendix 3.7-B, Attachment 2.</i>	Significant	Bio-MM#27. Delineate Active Nest Exclusion Areas for Other Breeding Birds. Bio-MM#28. Conduct Preconstruction Surveys and Monitoring for Raptors. Bio-MM#29. Raptor Protection on Power Lines. Bio-MM#30. Conduct Preconstruction Surveys for Swainson's Hawks. Bio-MM#31. Swainson's Hawk Nest Avoidance. Bio-MM#32. Monitor Removal of Nest Trees for Swainson's Hawks. Bio-MM#33. Conduct Protocol Surveys for Burrowing Owls. Bio-MM#34. Burrowing Owl Avoidance and Minimization. Bio-MM#56. Compensate for Loss of Swainson's Hawk Foraging Habitat. Bio-MM#57. Compensate for Loss of Burrowing Owl Foraging and Breeding Habitat.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Bio#20: Project impacts from the HST alternatives would permanently impact suitable habitat that has the potential to support special-status mammal species. <i>Refer to Appendix 3.7-B, Attachment 2.</i>	Significant	Bio-MM#35. Conduct Preconstruction Surveys for Nelson's Antelope Squirrel, Fresno Kangaroo Rat, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse. Bio-MM#36. Small-Mammal Avoidance and Minimization. Bio-MM#37. Conduct Preconstruction Surveys for Special-Status Bat Species. Bio-MM#38. Bat Avoidance and Relocation. Bio-MM#39. Bat Exclusion and Deterrence. Bio-MM#40. Conduct Preconstruction Surveys for American Badger. Bio-MM#41. American Badger Avoidance. Bio-MM#42. Conduct Preconstruction Surveys for San Joaquin Kit Fox. Bio-MM#43. Minimize Impacts on San Joaquin Kit Fox. Bio-MM#58. Compensate for Destruction of Natal Dens.	Less than Significant
Habitats of Concern			
Special-Status Plant Communities			
Bio#21: Project impacts from the HST alternatives would permanently impact special-status plant communities, and riparian areas. <i>Refer to Appendix 3.7-B, Attachment 3.</i>	Significant	Bio-MM#16. Conduct Preconstruction Surveys for Special-Status Plant Species and Special-Status Plant Communities. Bio-MM#44. Restore Temporary Riparian Impacts. Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#51. Compensate for Impacts on Special-Status Plant Species. Bio-MM#59. Compensate for Permanent Riparian Impacts. Bio-MM#60. Prepare and Implement a Habitat Mitigation and Monitoring Plan. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Jurisdictional Waters			
Bio#22: Project impacts from the HST alternatives would permanently affect jurisdictional waters. <i>Refer to Appendix 3.7-B, Attachment 4.</i>	Significant	Bio-MM#44. Restore Temporary Riparian Impacts. Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#59. Compensate for Permanent Riparian Impacts. Bio-MM#60. Prepare and Implement a Habitat Mitigation and Monitoring Plan. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters. WR-MM#1. Construction Stormwater Pollution Prevention Plan. WR-MM#2. Central Valley Regional Water Quality Board, Order No. 5-00-175, Waste Discharge Requirements General Order for Dewatering and Other Low-Threat Discharges to Surface Waters.	Less than Significant
Critical Habitat			
Bio#23: Project impacts from the BNSF Alternative would include critical habitat for vernal pool species. <i>Refer to Appendix 3.7-B, Attachment 5.</i>	Less than Significant	Bio-MM#18. Conduct Preconstruction Surveys for Vernal Pool Fauna. Bio-MM#19. Seasonal Vernal Pool Work Restriction. Bio-MM#20. Implement and Monitor Vernal Pool Protection. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#52. Compensate for Impacts on Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters.	Less than Significant
Conservation Areas			
Bio#24: Project impacts from the BNSF Alternative would disturb portions of recovery plans. <i>Refer to Appendix 3.7-B, Attachment 5.</i>	Significant	Construction and Project Mitigation Measures Bio-MM#16 through Bio-MM#64.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Bio#25: Project impacts from the HST alternatives would disturb portions of the Allensworth Ecological Reserve. <i>Refer to Appendix 3.7-B, Attachment 5.</i>	Significant (BNSF Alternative) No Impact (Allensworth Bypass Alternative)	PC-MM#1. Compensation for Staging in Park Property for Construction. PP-MM#1. Acquisition of Park Property.	Less than Significant (BNSF Alternative) No Impact (Allensworth Bypass Alternative)
Bio#26: Project impacts from the BNSF Alternative would disturb portions of habitat conservation plans. <i>Refer to Appendix 3.7-B, Attachment 5.</i>	Less than Significant	Construction and Project Mitigation Measures Bio-MM#16 through Bio-MM#64.	Less than Significant
Protected Trees			
Bio#27: Project impacts from the HST alternatives would permanently affect protected trees. <i>Refer to Appendix 3.7-B, Attachment 6.</i>	Significant	Bio-MM#47. Monitoring of Protected Trees. Bio-MM#62. Compensate for Impacts to Protected Trees.	Less than Significant
Wildlife Movement Corridors			
Bio#28: Project impacts from the HST alternatives would permanently reduce the functionality of wildlife movement corridors and habitat linkages. <i>Refer to Appendix 3.7-B, Attachment 5.</i>	Significant	Bio-MM#48. Wildlife Corridor Undercrossing (Implementation). Bio-MM#49. Install Wildlife Fencing. Bio-MM#50. Construction in Wildlife Movement Corridors. Bio-MM#63. Wildlife Corridor Artificial Dens. Bio-MM#64. Monitoring and Reporting Wildlife Corridor Undercrossings.	Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
HMF Alternatives			
Bio#29: The HMF alternatives would result in project impacts on:			
special-status plant species	Significant (Fresno Works-Fresno, Kings County-Hanford) Less than Significant (KCOG-Shafter East) No Impact (KCOG-Wasco, KCOG-Shafter West)	AQ-MM#1. Reduce Fugitive Dust by Watering. AQ-MM#3. Reduce Fugitive Dust from Material Hauling. Bio-MM#16. Conduct Preconstruction Surveys for Special-Status Plant Species and Special-Status Plant Communities. Bio-MM#17. Prepare and Implement Plan for Salvage, Relocation, and/or Propagation of Special-Status Plant Species. Bio-MM#51. Compensate for Impacts on Special-Status Plant Species. WR-MM#1. Construction Stormwater Pollution Prevention Plan.	Less than Significant (Fresno, Kings/Hanford, KCOG-Shafter East) No Impact (KCOG-Wasco, KCOG-Shafter West)
special-status wildlife species	Significant (all HMF alternatives)	Construction and Project Mitigation Measures Bio-MM#18 through Bio-MM#46, and Bio-MM#52 through Bio-MM#59, and Bio-MM#61. AQ-MM#1. Reduce Fugitive Dust by Watering. AQ-MM#3. Reduce Fugitive Dust from Material Hauling. WR-MM#1. Construction Stormwater Pollution Prevention Plan.	Less than Significant

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
special-status plant communities	Significant (Fresno Works-Fresno, Kings County-Hanford) Less than Significant (KCOG-Shafter East) No Impact (KCOG-Wasco, KCOG-Shafter West)	Bio-MM#16. Conduct Preconstruction Surveys for Special-Status Plant Species and Special-Status Plant Communities. Bio-MM#44. Restore Temporary Riparian Impacts. Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#51. Compensate for Impacts on Special-Status Plant Species. Bio-MM#59. Compensate for Permanent Riparian Impacts. Bio-MM#60. Prepare and Implement a Habitat Mitigation and Monitoring Plan. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters.	Less than Significant (Fresno, Kings County-Hanford HMF, KCOG-Shafter East) No Impact (KCOG-Wasco, KCOG-Shafter West)
jurisdictional waters	Significant (all HMF alternatives, except KCOG-Shafter West [No Impact])	Bio-MM#44. Restore Temporary Riparian Impacts. Bio-MM#45. Restore Temporary Impacts on Jurisdictional Waters. Bio-MM#46. Monitor Construction Activities within Jurisdictional Waters. Bio-MM#59. Compensate for Permanent Riparian Impacts. Bio-MM#60. Prepare and Implement a Habitat Mitigation and Monitoring Plan. Bio-MM#61. Compensate for Permanent and Temporary Impacts on Jurisdictional Waters. WR-MM#1. Construction Stormwater Pollution Prevention Plan. WR-MM#2. Central Valley Regional Water Quality Board, Order No. 5-00-175, Waste Discharge Requirements General Order for Dewatering and Other Low-Threat Discharges to Surface Waters.	Less than Significant (all HMF alternatives, except KCOG-Shafter West [No Impact])
critical habitat	No Impact (all HMF alternatives)	—	No Impact
recovery plans	No Impact (all HMF alternatives, except KCOG-Wasco [Significant])	Construction and Project Mitigation Measures Bio-MM#16 through Bio-MM#64.	No Impact (all HMF alternatives, except KCOG-Wasco [Less than Significant])
Allensworth Ecological Reserve	No Impact	—	No Impact

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Habitat Conservation Plans	Less than Significant (all HMF alternatives, except Fresno Works-Fresno and Kings County-Hanford [No Impact])	Construction and Project Mitigation Measures Bio-MM#16 through Bio-MM#64.	Less than Significant (all HMF alternatives, except Kings County-Hanford [No Impact])
Protected Trees	No Impact (all HMF alternatives, except Fresno Works-Fresno [Significant])	Bio-MM#47. Monitoring of Protected Trees. Bio-MM#62. Compensate for Impacts to Protected Trees.	No Impact (all HMF alternatives, except Fresno [Less than Significant])
wildlife movement corridors	Less than Significant (Fresno, Kings, KCOG-Shafter East, KCOG-Shafter West HMF Alternatives). Significant (KCOG-Wasco)	Bio-MM#49. Install Wildlife Fencing. Bio-MM#50. Construction in Wildlife Movement Corridors.	Less than Significant
Station Alternatives			
Bio#30: The station alternatives would result in project impacts on:			
special-status plant species	No Impact (all Station Alternatives)	—	No Impact

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
special-status wildlife species	Significant (Fresno Station-Mariposa and Kings/Tulare Regional) Less than Significant (Fresno Station-Kern, Bakersfield stations [North and South])	Construction and Project Mitigation Measures Bio-MM#18 through Bio-MM#46, and Bio-MM#52 through Bio-MM#59, and Bio-MM#61. AQ-MM#1. Reduce Fugitive Dust by Watering. AQ-MM#3. Reduce Fugitive Dust from Material Hauling. WR-MM#1. Construction Stormwater Pollution Prevention Plan.	Less than Significant
special-status plant communities	No Impact (all station alternatives)	—	No Impact
jurisdictional waters	No Impact (all station alternatives)	—	No Impact
critical habitat	No Impact (all HMF alternatives)	—	No Impact
recovery plans	Significant (Bakersfield stations [North and South]) No Impact (Fresno stations [Mariposa and Kern] and Kings/Tulare Regional Station)	Construction and Project Mitigation Measures Bio-MM#16 through Bio-MM#64.	Less than Significant (Bakersfield stations [North and South]) No Impact (Fresno stations [Mariposa and Kern] and Kings/Tulare Regional Station)
Allensworth Ecological Reserve	No Impact	—	No Impact

Table 3.7-18
Summary of CEQA Impacts, Mitigation Measures, and Level of Significance after Mitigation

Impact	Level of Significance before Mitigation	Mitigation Measure	Level of Significance after Mitigation
Habitat Conservation Plans	Less than Significant (Bakersfield stations [North and South]) No Impact (Fresno stations [Mariposa and Kern] and Kings/Tulare Regional Station)	Construction and Project Mitigation Measures Bio-MM#16 through Bio-MM#64.	Less than Significant (Bakersfield stations [North and South]) No Impact (Fresno stations [Mariposa and Kern] and Kings/Tulare Regional Station)
Protected Trees	Significant (Fresno Station-Mariposa and Bakersfield Station-North) Less than Significant (Fresno Station-Kern and Bakersfield Station-South) No Impact (Kings/Tulare Regional Station)	Bio-MM#47. Monitoring of Protected Trees. Bio-MM#62. Compensate for Impacts to Protected Trees.	Less than Significant (all station alternatives, except Kings/Tulare Regional Station [No Impact])
wildlife movement corridors	Less than Significant (all Station Alternatives)	Bio-MM#49. Install Wildlife Fencing. Bio-MM#50. Construction in Wildlife Movement Corridors.	Less than Significant
<p>Notes:</p> <p>— = Not applicable HMF=Heavy Maintenance Facilities Fresno= Fresno Works-Fresno HMF Kings=Kings County-Hanford HMF</p> <p>KCOG-Wasco= Kern Council of Governments-Wasco HMF KCOG-Shafter-West= Kern Council of Governments-Shafter-West HMF KCOG-Shafter-East=Kern Council of Governments-Shafter-East HMF</p>			

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